



Nonpoint Source Annual Report

State Fiscal Year 2015-2016

This annual report is the primary mechanism by which United States Environmental Protection Agency evaluates whether California has made satisfactory progress in implementing the approved milestones of its Nonpoint Source Program Implementation Plan. It is also a way for the California Water Boards to share with the public and other interested parties major accomplishments, many of which were made possible by Clean Water Act section 319 funding from the United States Environmental Protection Agency.

July 1, 2015 – June 30, 2016



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Clean Water Action Section 319 Grant

In fiscal year 2015-2016, the State Water Resources Control Board (State Water Board) received a Federal Fiscal Year 2015 Clean Water Act section 319 grant for \$8,023,000 (FFY15 grant) from US EPA. In April 2016, the State Water Board (in collaboration with the Regional Water Quality Control Boards and US EPA) selected 12 proposals from a total of 31 proposals to receive approximately \$4.7 million in funding from the FFY15 grant. About \$3.7 million in watershed project funds and \$1 million in NPS program funds was awarded (Table 1). In addition, \$300,000 of the FFY15 grant was used to support a watershed project from 2014. The remainder of the FFY15 grant (or about \$3.3 million) was used to support Water Board staff work described in this annual report.

Table 1: Projects Awarded Clean Water Act 319(h) Funds in fiscal Year 2015-2016

| Grant Agreement | Region | Watershed Project vs Program | Project Title | Applicant | Total Awarded | Grant execution date | Termination date |
|-----------------|--------------------------|------------------------------|---|---|---------------|----------------------|------------------|
| 14-428-256 | Lahontan Region | Watershed project | Accelerated Best Management Practice Implementation in the Lake Tahoe Basin | Tahoe Regional Planning Agency (TRPA) | \$300,000 | 6/18/2015 | 12/31/2017 |
| D1513101 | North Coast Region | Program | Elk River Stewardship Program | County of Humboldt | \$174,956 | 6/6/2016 | 6/30/2020 |
| D1513102 | North Coast Region | Watershed project | Bogus Watershed Riparian Protection Project | Shasta Valley Resource Conservation District | \$421,659 | 5/20/2016 | 12/31/20 |
| D1513201 | San Francisco Bay Region | Watershed project | Conserving Our Watersheds Phase V: Planning Assistance to Timely Implementation | Marin Resource Conservation District | \$600,000 | 6/22/2016 | 6/30/2020 |
| D1513202 | San Francisco Bay Region | Watershed project | Reducing Road-related Sediment Delivery via LandSmart On-the-Ground | Napa County Resource Conservation District | \$552,800 | 6/17/2016 | 6/30/2020 |
| D1513203 | San Francisco Bay Region | Program | Bale Slough/Bear Creek Sediment Reduction and Habitat Enhancement Planning | Napa County Resource Conservation District | \$170,280 | 3/4/2016 | 6/30/2020 |
| D1513204 | San Francisco Bay Region | Program | Guadalupe River Watershed Mercury Remediation: Upper Jacques Gulch Restoration Design | San Francisco Estuary Partnership/AB AG | \$174,984 | 6/8/2016 | 6/30/2020 |
| D1513205 | San Francisco Bay Region | Watershed project | Lagunitas Creek Floodplain Restoration Project | Marin Municipal Water District | \$444,670 | 5/25/2016 | 6/30/2020 |
| D1513301 | Central Coast Region | Watershed project | Pajaro Watershed Livestock and Land Program | Resource Conservation District of Santa Cruz County | \$662,570 | 5/13/2016 | 6/30/2020 |
| D1513302 | Central Coast Region | Program | Oso Flaco Lake Planning and Assessment | Coastal San Luis Resource Conservation District | \$161,400 | 6/21/2016 | 6/30/2020 |

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| Grant Agreement | Region | Watershed Project vs Program | Project Title | Applicant | Total Awarded | Grant execution date | Termination date |
|-----------------|-----------------------|------------------------------|--|---|---------------|----------------------|------------------|
| D1513401 | Los Angeles Region | Program | Developing Nutrient Management Plans and Prioritizing MM and MP at Equestrian Facilities in Ventura River Watershed | Ventura County Resource Conservation District | \$147,000 | 5/13/2016 | 6/30/2020 |
| D1513402 | Los Angeles Region | Program | Study of water quality impairments attributable to Onsite Wastewater Treatment Systems (OWTS) in the Ventura River Watershed | County of Ventura - Environmental Health Division | \$175,000 | 6/29/2016 | 6/30/2020 |
| D1513501 | Central Valley Region | Watershed project | Implementation of agricultural BMPs in alfalfa, almonds cotton that aid in restoration of the San Joaquin River watershed | Sustainable Cotton Project | \$749,997 | 3/4/2016 | 6/30/2019 |

Timber Harvest and Forest Activities

Through efforts by the State Water Board and the Regional Water Quality Control Boards (collectively Water Boards), the California Nonpoint Source Pollution Control Program addressed the following timber harvest and forest goals for the 2015-2016 fiscal year:

- Continue stewardship of watersheds
- Develop and adopt permitting for WDRs and TMDLs
- Review Timber Plans to reduce sediment loading into impaired waters
- Establish and implement restoration programs for endangered species
- Facilitate public outreach and education regarding timber NPS activities

Local Assistance Program

The California Budget Act appropriated \$4 million from the Timber Regulation and Forest Restoration Fund (Timber Fund) to the State Water Board to support projects that implement forest management measures to improve water quality on forest lands. Two million dollars was awarded by the State Water Board during fiscal year 2015-2016 and \$2 million was awarded during fiscal year 2016-2017. Altogether, the \$4 million will support seven separate projects (Table 2).

Table 2: 2015-2016 Clean Water Act section 319(h) Grant program - Recommended Timber Fund Projects List

| Regional Water Board | Project Title | Applicant | Project Description | Timber Funds Awarded |
|----------------------|--|------------------------|--|----------------------|
| 1 | Elk River Sediment Remediation Pilot Implementation Projects | California Trout, Inc. | This project will develop engineering designs, construction plans and specifications, and obtain regulatory permits (all cost-share items), then implement two pilot projects on the North Fork Elk River (tributary to Humboldt Bay, CA). The Elk River watershed is currently the focus of intensive efforts to resolve complex land- use and water quality impairment issues. Two key programs are integral to these efforts: (1) the TMDL and resultant WDR will address timber management and prevent excessive sediment delivery to Elk River; and (2) the recently initiated Recovery Assessment will provide technical analysis and guidance to implement large- scale sediment remediation in Elk River. In parallel with the Recovery Assessment, CalTrout and partners are initiating a pilot implementation program, intended to test sediment remediation approaches that are considered potentially viable in a next-phase, larger-scale implementation program. | \$638,557 |

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| Regional Water Board | Project Title | Applicant | Project Description | Timber Funds Awarded |
|----------------------|---|---|--|--|
| 5 | Battle Creek Watershed Based Plan | Battle Creek Watershed Conservancy | This project will develop and implement a Battle Creek Watershed-Based Plan identifying and addressing sediment impacts on fish habitat and water quality and establishing adaptive management practices to ensure long-term maintenance of fish habitat quality and resiliency to natural disturbance. Two demonstration projects will implement and test sediment source reduction measures. The Battle Creek watershed, a tributary to the Sacramento River in central Northern California, is critical to the recovery of listed Chinook salmon and steelhead. Sediment is the primary water quality concern and is negatively impacting anadromous habitats. Significant data gaps exist in the physical and biological condition of stream channels and identification of sediment causes and sources. Habitat condition goals for specific stream segments are not established, nor is there a framework to assess, evaluate and adapt forest management measures to attain sediment reduction and channel condition goals. | \$492,438 |
| 5 | Ponderosa Way Road Assessment and Sediment Reduction Plan | Resource Conservation District of Tehama County | This project includes an erosion/sediment inventory and assessment survey along 96 miles and will implement sediment control along 10 miles of Ponderosa Way between the Tehama/Shasta County Line and approximately the Butte County line. Immediately adjacent portions of intersecting roads along this portion of Ponderosa Way will be included as well. Ponderosa Way crosses 6 key watersheds of the Sacramento River system including; Battle Creek, Paynes Creek, Antelope Creek, Upper Mill Creek, Deer Creek and Pine Creek which are considered high quality habitat for spawning and rearing listed salmonids. The assessment will lead to a prioritized plan of action for future erosion prevention and sediment control projects including design, development of work scopes and estimated budgets for restoration efforts related to both episodic and chronic erosion and recently developed sediment plumes along Ponderosa Way. | \$300,000 (2015/2016 Timber Fund) \$500,000 (2016/17 Timber Fund) |
| 1 | Large Wood Augmentation Projects in the Mendocino Hydrologic Unit | Trout Unlimited - North Coast Coho Project | This project will address the Program Preference, "Large Wood Augmentation Projects - Initiative RB1.3 - Mendocino Co Permit Coordination and Initiative RB1.4 Wood for Salmon Working Group," from the 2014-2020 CA NPS Program Implementation Plan by collaboratively developing multiple cost-effective, large wood augmentation projects that when implemented will address excessive sedimentation within the Mendocino Coast Hydrologic Unit. The proposed project intends to restore critical CCC Coho salmon habitat by improving water quality and instream conditions. The proposal includes efforts to conduct effectiveness monitoring before and after large wood augmentation occurs in order to measure the project's success. In addition to the identified tasks related to implementation, the project intends to provide an education and outreach event that will target a professional audience. This task proposes to host a technical field school specializing in large wood augmentation techniques. | \$569,005 |

| Regional Water Board | Project Title | Applicant | Project Description | Timber Funds Awarded |
|----------------------|---|--|---|----------------------|
| 1 | Mendocino Coast TMDL Implementation Program | Mendocino County Resource Conservation District | This program builds upon a successful implementation strategy pioneered by Mendocino County Resource Conservation District and Pacific Watershed Associates in the Garcia and Navarro watersheds to support Sediment TMDL goals. The proposed program will: 1) Educate land stewards and equipment operators using best management practices through 3 workshops and 150 copies of The Handbook for Forest, Ranch, and Rural Roads (2015); 2) Conduct 40-45 miles of comprehensive road inventories in coastal watersheds identified by a technical peer review; and 3) Implement 18 miles of road treatments within the Garcia, Gualala, and Navarro River watersheds. The proposed stewardship model will complete implementation of the remaining District Erosion Control Plan treatments in the Garcia River (Blue Waterhole Creek); prioritized treatments in the Gualala River (Stewart Creek); and road segments identified in the 2014, 319(h) Collaborative TMDL Planning Project for Navarro River, with a salmonid habitat focus. | \$800,000 |
| 5 | Post-Fire Response to Forest Management: Mitigations for Improved Water Quality Performance | California Department of Forestry and Fire Protection Watershed Protection Program | High severity wildfire is a significant risk to water quality, and the spatial extent of fire has been increasing due to increased fuel loading and climate changes. The Boggs Mountain Demonstration State Forest (BMDSF) is managed by CALFIRE and was burned during the 2015 Valley Fire. This combination offers an unparalleled opportunity to explore the effects of post-fire forest management on water quality. Managers are increasingly faced with the task of recovering the value of burned timber while providing for water quality protection, yet there is a lack of information on the impacts of post-fire management on water quality in California. We will assess the responses of runoff and sediment to logging and reforestation activities and demonstrate logging BMPs suited for use in burned forests. By providing information on post-fire water quality responses to various management treatments, we will provide managers information and tools to help mitigate potential water quality impacts. | \$329,519 |
| 5 | Roaside Fuel Reduction | Yuba County Public Works | This project will construct 185 acres of shaded fuel breaks on 30 miles of County maintained roads. Implementation will be through cutting with chainsaws and chipping the material. The result will be improved access for fire suppression resources and a safer egress route for community evacuees during a fire. There will also be the benefit of fire prevention and mitigation provided by the fuel breaks. Reducing the chance and severity of forest fires will decrease water quality degradation that occurs from erosion of bare soil after wildfires. | \$370,000 |

Permitting Efforts

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) developed a new draft General Order of Waste Discharge Requirements for timber harvest and related forest management activities on federal and non-federal lands. Public meetings were held in late 2015 and early 2016 to discuss the new draft General Order. Staff expects to present a final draft to the Board for consideration of adoption in early 2017.

After many years of analysis and review, the North Coast Regional Water Quality Control Board (North Coast Water Board) adopted on May 12, 2016 the [Action Plan for the Upper Elk River Sediment Total Maximum Daily Load \(TMDL\)](#) as an amendment to the Basin Plan via Resolution R1-2016-0017. Staff also completed a public review draft of the companion [Waste Discharge Requirements for Nonpoint Source Discharges Related to Timber Harvesting](#) (Timber

Harvest WDRs) to further control sediment sources in the upper watershed. It also proposes enhanced riparian protections and restrictions on winter operations and harvest activities in highly erosive areas. The North Coast Water Board will consider the Timber Harvest WDRs for adoption on November 30, 2016.

North Coast Water Board staff continues to work closely with the Mendocino County Resource Conservation District (MCRCD) through the implementation of the Mendocino County Permit Coordination Program. The program is a streamlined permit process for landowners who want to conduct conservation and restoration projects on their property. Such projects can easily acquire regulatory and California Environmental Quality Act (CEQA) coverage under the North Coast Water Board's [Waiver of Waste Discharge Requirements and General Water Quality Certification](#).

In fiscal year 2015-2016, North Coast Water Board staff worked with the MCRCD on a variety of projects types, including: (1) treatment on the upper Russian River watershed to control the spread of invasive *Arundo donax* also known as Giant Reed or Elephant Grass; (2) removal of a major fish passage barrier on Denmark Creek, a tributary to the Navarro River; (3) removal of several other fish barriers and implementation of erosion control projects in of the Navarro River Watershed; and (4) sediment and erosion control efforts on several tributaries to the Garcia River.

North Coast Water Board staff also worked with the MCRCD during the fiscal year to acquire \$800,000 through the 2016 Timber Fund grant program for the Mendocino Coast TMDL Implementation Program grant. The grant agreement is currently being finalized and will result in treatments of eighteen miles of road in the Navarro, Gualala, and Garcia River watersheds. The permit coordination program will be utilized for the permitting and CEQA analysis associated with all sediment control work.

Lahontan Regional Water Quality Control Board (Lahontan Water Board) staff reviewed environmental documents and commented on 16 timber and vegetation management projects. Lahontan Water Board Staff conducted 21 pre-harvest, active harvest, post-harvest, or complaint driven inspections of timber and vegetation management and restoration project sites on federal forest lands for compliance with the Lahontan Water Board's Timber Waiver. Twelve new projects were enrolled under the Timber Waiver. Staff reviewed implementation, forensic, and effectiveness monitoring reports for projects enrolled under the Timber Waiver. Lahontan Water Board staff approved annual operations plan for 2016 activities for the United States Forest Service (USFS) Lake Tahoe Basin Management Unit's South Shore Forest Restoration Project that treats the wildland urban interface surrounding South Lake Tahoe.

Lahontan Water Board staff participated in multiple meetings with USFS Regional Hydrologist and Regional Range Officers, as well as hydrology and range line officers from multiple National Forests (Modoc, Lassen, Plumas, Tahoe, Lake Tahoe Basin Management Unit, Shasta-Trinity, Mendocino, El Dorado) to develop a framework for a federal Nonpoint Source permit to address NPS pollution from USFS lands in the Lahontan Region. Staff has also engaged with the U.S. Bureau of Land Management (BLM), CA State Office Division of Natural Resources director to develop a framework for a federal Nonpoint Source permit to address NPS pollution from BLM lands in the Lahontan Region.

Lahontan Water Board staff has had significant interaction with Central Valley Regional Water Board staff (bi-weekly phone calls or in person meetings) to develop an understanding of their approach as they develop a federal Nonpoint Source permit for USFS and BLM activities in the Central Valley Region. This interaction is intended to ensure that the policies developed by the Lahontan and Central Valley Regional Water Boards are uniform and/or distinct in order to

provide adequate water quality protection while recognizing the differences in resource needs, land use, climate, and topography between the regions.

Elk River

The 2015-2016 fiscal year was one of the most active and successful years to date with respect to efforts to confront the highly complex sediment issues in the Elk River watershed (Figure 1). Important advancements were made on several fronts: scientific, funding, policy, and stewardship-based coordination.

The [Elk River Recovery Assessment](#), led by California Trout and supported by a 2015 California Timber Fund grant, successfully completed the collection and analysis of a wide range of parameters for the Elk River, including continuous suspended sediment data, thalweg profiles, channel cross-sections, channel bed conditions, flow velocity, and more. Data were used to construct a conceptual model of desired future conditions for the river and a hydrodynamic sediment

transport model which is now being calibrated and validated. Additional data compilation and analysis were provided in late 2015 through Tetra Tech, Inc.'s [Upper Elk River Technical Analysis for Sediment](#).

Three sediment remediation pilot projects are being designed to incorporate technical and community input from both the Recovery Assessment and the stewardship work groups to test the efficacy of active, mechanical sediment remediation in key reaches of the Elk River. In total, the removal of approximately 32,000 yd³ of sediment from impacted reaches of the Elk River is now funded under various projects. The framework is also in place to evaluate associated successes and challenges, while ensuring that all interested stakeholders can access information and provide input throughout the remediation process.

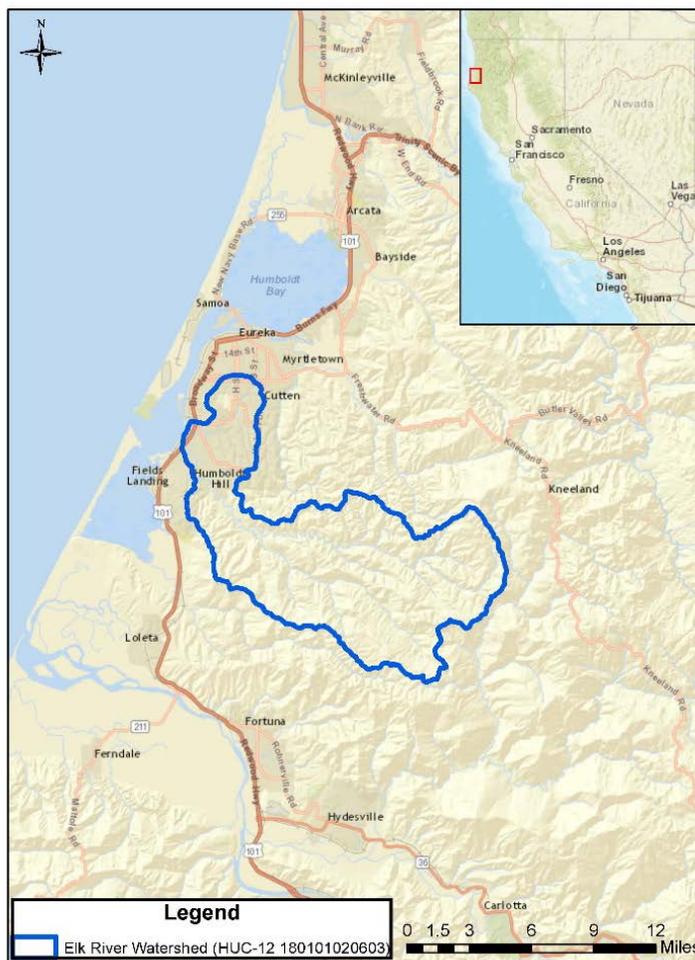


Figure 1: Elk River Watershed

General Stewardship Efforts in the North Coast Region

The North Coast Water Board hired a permanent, full time watershed steward; stakeholder partnerships solidified and



Figure 2: Elk River Stewardship Meeting, June 30, 2016

formalized under the stewardship program; and two grants and one contract began producing deliverables. Under the North Coast Water Board stewardship program, led by the County of Humboldt and supported by a [2015 319\(h\) planning grant](#), stakeholders executed all primary and secondary contracts, assembled the steering committee, assembled work groups, completed the operating agreement, and conducted outreach to the larger community. One large public meeting and several work group meetings were held during the fiscal year. This process is on track to deliver action plans for in-channel sediment remediation, science and monitoring, and health and safety by early 2018.

Wood for Salmon Working Group

North Coast Water Board staff continued to promote the implementation of priority recovery actions for threatened and endangered salmonids through the ongoing leadership and organization of the [Wood for Salmon Working Group](#). The group is a coalition of state and federal regulatory agencies, tribal representatives, environmental non-profits, resource conservation districts, and other stakeholders that work together to



Figure 3: Pre-construction photo of a road crossing that blocks salmonid passage in the Navarro River Watershed. September 2, 2015

support implementation of restoration actions, especially large wood augmentation projects. The group held three meetings during the fiscal year covering a range of topics related to habitat restoration, new regulatory requirements, permit updates, grant funding opportunities, education and outreach, and monitoring.



Figure 4: Post-construction photo of the same road in Figure 3 with a new bridge and open salmonid passage. September 30, 2015

North Coast staff and group members worked closely with partners from Trout Unlimited to acquire \$569,006 through the 2015 Timber Fund grant program for the Large Wood Augmentation Projects in the Mendocino Coast Hydrologic Unit. The grant is underway and will facilitate large wood restoration projects across at least fifteen miles of salmon and trout streams, plus a large wood technical restoration field school.

The group also worked closely with the CAL FIRE, NOAA-National Marine Fisheries Service, and California Department of Fish and Wildlife, to develop guidance documents for implementation of large wood

restoration projects through the [Anadromous Salmonid Protection Rule Section V Guidance of the Forest Practice Rules](#). The guidance is designed to educate timberland owners on this underutilized permitting pathway by providing regulatory clarity and insights, permitting expectations, and process.

Finally, North Coast Water Board staff provided technical and planning support to the State Water Board Division of Water Quality as they continue to work on the revisions to the General Water Quality Certification for Small Habitat Restoration Projects. The certification is the primary permit mechanism for large wood augmentation projects and other restoration activities in the North Coast Region.

Timber Harvest Plan Reviews

During fiscal year 2015-2016, San Francisco Bay Water Quality Control Board (San Francisco Bay Water Board) staff reviewed seven timber plans (THPs and conversions) covering nearly 3,000 acres, and our work on the Review Team resulted in reducing sediment input into impaired creeks. The San Francisco Water Board has concentrated on the Pescadero Creek and Butano Creek watersheds, which contain an estimated 11,000 acres of privately-owned timber lands. Located in the Santa Cruz Mountains of southern San Mateo County, Pescadero and Butano creeks are impaired by excess sediment, mainly due to large-scale clearcutting of old growth forests over the past 150 years, but also from logging of residual old growth and second- and third-generation forests from the 1950s through today.

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff reviewed timber harvest plans, conducted outreach to industry and watershed groups, performed field inspections, responded to complaints, and initiated enforcement actions for those activities that violated regulatory conditions and criteria and threatened to adversely impact water quality. Staff completed 182 inspections, 110% of the target goal for fiscal year 2015-2016.

Irrigated Lands/Agriculture

Through efforts by the State Water Board and the Regional Water Quality Control Boards (collectively Water Boards), the California Nonpoint Source Pollution Control Program addressed the following irrigated lands and agriculture goals for the 2015-2016 fiscal year:

- Continue stewardship of watersheds containing irrigated lands
- Regulate water quality through waivers of Waste Discharge Requirements
- Implement groundwater protection strategies
- Manage existing orders and engage in enforcement actions against entities for violations
- Facilitate public outreach and education regarding the Irrigated Lands Regulatory Program (ILRP) and NPS agriculture issues

Total Nitrogen Applied Records (Central Coast Region)

In the Central Coast Region (Figure 5), Tier 2 and 3 ranches with a high risk of loading nitrogen to groundwater have been required to submit annual reports of total nitrogen applied in pounds/acre since October 1, 2014.

Growers also report the nitrogen applied in irrigation water, average nitrate concentration in irrigation water, and nitrogen content in the soil. To support growers with this reporting, Central Coast Regional Water Quality Control Board (Central Coast Water Board) staff conducted eight workshops on five different dates in August 2015, with four workshops in Spanish and four in English. Staff sent flyers announcing the workshops to growers and technical service providers; over 500 emails were sent as well as USPS mailings and faxes to those without email accounts. The Central Coast Water Board now has two years of nitrogen application data, with a third year of data to be received by October 1, 2016. Staff provided a PowerPoint presentation summarizing the total nitrogen applied report requirement, compliance with the requirement, data received, and discussion points on using this information to further implement the Agricultural Order in an item to the Central Coast Water Board in March 2016.



Figure 5: Central Coast Region

Enforcement Actions

Central Coast Water Board staff is developing an implementation strategy to actively identify growers who have failed to enroll in the Agricultural Order. A gross assessment indicates that non-enrollment may be prevalent, particularly in a few specific areas. Growers, consultants, and agency groups have voiced their concerns about creating a level playing field in the light of the many growers who make considerable effort to comply with regulatory requirements while others are able to avoid them simply by not enrolling in the Order. From July 1, 2015 to June 30, 2016 Central Coast Water Board staff issued 16 notice of violation letters for failure to enroll in the Agricultural Order. Staff is continuing the work to identify and correspond with growers who are not enrolled in the Agricultural Order.

From May 21, 2015, through August 3, 2015, Central Coast Water Board staff issued 380 notices of violation letters involving 517 individual ranches/farms for failure to submit individual groundwater monitoring data as required by the Agricultural Order. Staff is working with individual growers and laboratories to assist them with compliance.

Permitting

The Central Coast Water Board agricultural order, Order No. R3-2011-0012 (ag order version 2.0), was adopted in March 2012 and expires on March 14, 2017. To allow uninterrupted regulation of discharges of waste from irrigated agricultural operations, the Central Coast Water Board must act to renew the existing waiver or adopt a new waiver prior to this expiration date. Central Coast Water Board staff plans to present a new general waiver for Central Coast Water Board consideration prior to the expiration date. The proposed 2017 ag order (version 3.0) will be largely unchanged from the current order in most aspects, but will have new compliance dates. This proposed 2017 ag order will not address currently unresolved ag-order-related litigation and petitions, as it is not likely that these outstanding issues will be decided with sufficient time to include within the proposed 2017 ag order in March 2017. The proposed 2017 ag order will have a term of five years. However, Central Coast Water Board staff will accelerate development of a proposed ag order version 4.0, which will contain any changes necessitated by decisions from currently unresolved litigation and petitions and will also incorporate "lessons learned" elements from implementing version 2.0; we anticipate that development of ag order version 4.0 will take less than the five-year term of ag order version 3.0.

Agricultural activities can generate pollutants such as sediment, pesticides, and nutrients that degrade water quality and impair beneficial uses. The Los Angeles Regional Water Quality Control Board (Los Angeles Water Board) has adopted numerous TMDLs that have identified irrigated agriculture as the predominant source of these pollutants. These TMDLs address the following waterbodies and impairments: (1) Calleguas Creek for polychlorinated biphenyls, metals, nitrogen, organochlorine pesticides, organophosphate pesticides, salts, and toxicity; (2) McGrath Lake for historic pesticides and polychlorinated biphenyls; (3) Oxnard Drain #3 for organochlorine pesticides and polychlorinated biphenyls; (4) Santa Clara River for bacteria, chlorides, and nutrients; (5) Santa Clara River Estuary for toxaphene; and (6) Ventura River for algae.

The intent of the Los Angeles Water Board's Irrigated Lands Regulatory Program is to attain and maintain Water Quality Benchmarks in receiving waters by regulating the discharges from irrigated agriculture lands. The objectives of the program are to provide agricultural farm management educational opportunities to growers, monitor the water quality impacts of runoff from irrigated agriculture facilities on receiving waters and, if required, mitigate the impacts. The Los Angeles Water Board has adopted a Conditional Waiver that requires agriculture dischargers to (1) enroll, (2) obtain education on water quality issues, (3) conduct water quality

monitoring, and (4) develop a water quality management plan (WQMP) to implement iterative management practices (MPs) to ultimately attain Water Quality Benchmarks.

Agricultural operators may enroll as an individual discharger or as a member of a Discharger Group. The Nursery Growers Association Los Angeles County Irrigated Lands Group (NGA-ILG) and the Ventura County Agriculture Irrigated Lands Group (VCAILG) are the two Discharger Groups in the Los Angeles Region that have formed to comply with the Conditional Waiver.



Figure 6: Education event for Ventura County Growers

The Discharger Groups conduct the monitoring and prepare WQMPs for their members. VCAILG has a drainage area monitoring program. Sites are located at the lower end of agricultural drains and tributaries and represent discharges to surface waters from agriculture. NGA-LAILG has an edge-of-field representative monitoring program. Sampling sites were selected to represent the NGA-LAILG group as a whole based on various crop types, water practices, fertilizer and pesticide use, management practices and locations.

During fiscal year 2015-2016, the Los Angeles Water Board adopted a temporary six-month Conditional Waiver (Order No. R4-2015-0202) in October 2015, and then a five-year Conditional Waiver (Order No. R4-2016-0143) in April 2016. Los Angeles Water Board staff met multiple times with VCAILG, NGA-ILG, and environmental organizations to develop the new Conditional Waiver requirements. Order No. R4-2016-0143 contains several enhancements and additions to previous Conditional Waivers, including:

- Order No. R4-2016-0143 contains additional requirements to ensure that dischargers are on the right track to ultimately attain Water Quality Benchmarks. If waste concentrations at a monitoring site are above a Water Quality Benchmark and there is not a decreasing trend in the concentrations, then Discharger Groups must conduct a source investigation of the member sites represented by the monitoring site to narrow down the cause of the exceedance.
- Order No. R4-2016-0143 also specifies that the iterative WQMP and MP implementation process may not continue indefinitely. If Water Quality Benchmarks for watersheds subject to TMDLs are not attained within a certain time, then Discharger Group members are subject to individual discharge monitoring and discharge limitations.
- Order No. R4-2016-0143 includes more specific and detailed WQMP requirements when Water Quality Benchmarks are exceeded. These requirements clarify what type of MP information needs to be collected, how the MP information must be reported, and the

process for ensuring that growers implement additional MPs if needed to attain Water Quality Benchmarks.

- Order No. R4-2016-0143 requires dischargers to implement MPs to prevent nitrogen loading to groundwater and to conduct groundwater monitoring in Ventura County to assess trends and evaluate whether MPs are effective.

Since adoption of Order No. R4-2015-0202, Los Angeles Water Board staff have been working with the Discharger Groups to develop the member MP surveys that will inform development of the new WQMPs, which are due April 2017. The surveys must contain specific quantifiable information, such as area treated by each MP per farm, to produce the required level of detail for MP reporting in the WQMPs. The Discharger Groups have submitted their surveys and Los Angeles Water Board staff are currently reviewing the surveys for Executive Officer approval.

During fiscal year 2015-2016, the Los Angeles Water Board increased enrollment in Los Angeles County by approximately 25 new members due to a collaborative effort with the Los Angeles Department of Water and Power. The Los Angeles Water Board also increased enrollment in Ventura County from 76% to 80% enrolled members due to outreach and enforcement efforts, including the issuance of 16 notices of violation.

The Central Valley Water Board's Irrigated Lands Regulatory Program implements nine General Orders that were adopted from 2012 – 2015. Eight of the orders allow the formation of grower coalitions (Coalitions) that monitor and report on behalf of their members, and one is for individual growers. In total, the General Orders establish a regulatory framework to be addressed by all growers in the Central



Figure 7: Coachella Valley agriculture and canal

Valley Region, while individually providing the flexibility required by geographic or commodity-based constraints. This fiscal year, the Central Valley Water Board made changes to the orders to facilitate communication and outreach efforts to growers, and to adjust requirements for managed wetlands to better address the differences between them and normal irrigated agriculture. In addition, growers in the Central Valley Region in areas susceptible to sediment erosion were required to complete a Sediment and Erosion Control Plan Template to address the potential to discharge sediment into surface waters. All growers in the Central Valley Region were required to complete a Farm Evaluation Template, describing farm management practices by parcel.

Protection of groundwater quality has been a major focus in the Central Valley Region during the past year. The General Orders' groundwater protection strategy begins with a review of groundwater quality conditions in each Coalition area and the recognition of areas most susceptible to impacts from irrigated agriculture (High Vulnerability Areas). Where groundwater quality impacts have been identified, management plans, grower outreach, and changes in practices are required. Longer term components of the strategy include an evaluation of

management practices that can be protective of groundwater quality (Management Practice Evaluation Work Plan), and long term monitoring of groundwater quality to document trends in water quality in the coming decades (Trend Monitoring). These components of the groundwater protection strategy will be implemented in the next several years.

In the Lahontan Region, no comprehensive program exists for all irrigated land in the region. Lahontan Water Board staff has issued permits for some irrigated lands such as lands associated with dairies, grazing lands in the Bridgeport Valley, agricultural treatment units in Hinkley, and irrigated lands using recycled wastewater. Lahontan Water Board staff has also identified current and past agricultural activities as the source or contributors to some nitrate and salt groundwater pollution problems in the region and in some cases, has taken enforcement actions. Lahontan Water Board staff also spent significant time working on contaminated groundwater issues associated with irrigated agricultural areas and irrigated land areas associated with dairies.

Lahontan Water Board staff is in the beginning stages of developing a Lahontan Region regulatory approach for irrigated lands. Lahontan Water Board staff has spent time in 2015 evaluating the irrigated lands regulatory programs of the other eight regional boards, which vary in their development and implementation. Available options include adopting individual or general Waste Discharge Requirements, and Waivers of Waste Discharge Requirements. Further, the use of third party coalitions is being explored to help implement any selected regulatory approach.

Within the Lahontan Region, there are approximately 500,000 acres of irrigated land. About 80% of this land is used for grazing of livestock and does not produce a harvested crop. Approximately 64,300 acres in the North Lahontan region are irrigated to produce hay, alfalfa, winter wheat, rye, and other crops (approximately 6,000 acres are fallow or idle cropland). Approximately 22,000 acres in the South Lahontan region are irrigated to produce alfalfa, hay, and other crops (approximately 10,700 acres are fallow or idle cropland). As part of regulatory program development, Water Board staff needs to accurately identify types and locations of irrigated land in the region, conduct outreach to gather stakeholder input, and present options to the Water Board prior to bringing a proposed regulatory approach to the Board for adoption. Water Board staff participates in the State Water Board's Irrigated Lands Program Roundtable to remain up-to-date on the other regions' progress/lessons learned and to work together on consistent data collection and management. Water Board Staff organized and participated in a tour of the Squaw Valley Ski Area for State Water Board ILRP staff who is involved in the Healthy Soils Initiative. The tour focused on areas where compost and compost tea are used to stabilize slope areas.

In the Colorado River Basin Region, memberships to the agricultural coalitions have been high due in part to intensive outreach from the Colorado River Basin Water Board and coalitions. The Palo Verde Coalition submitted their third Annual Monitoring Report in March 2016 to the Water Board. The Bard Coalition water quality monitoring program began in June 2015 and they submitted their first Annual Monitoring Report in March 2016. According to both Bard and Palo Verde Coalitions, membership is at 100%. The Coachella Valley Coalition began implementing their Compliance Program in April 2015. They are currently accepting membership and have reported that membership is at 85%. The Coachella Valley Coalition submitted their first Annual Monitoring Report in March 2016. The Imperial Valley Coalition and Colorado River Basin Water Board staff held nine drainshed meetings in May and June 2016 to educate farmers about the requirements of the adopted agricultural waiver. The Imperial Valley Coalition began implementing their Compliance Program in July 2016 and is currently accepting members.



Figure 8: Agriculture in Bard Valley

In the Santa Ana Region, staff largely focused on finalizing a Conditional Waiver of Waste Discharge Requirements for Agricultural Operations in the San Jacinto River Watershed (Santa Ana Water Board Order No. R8-2016-0003) (also known as the CWAD or Conditional Waiver) and associated Mitigated Negative Declaration. The CWAD is the Santa Ana Water Board's first order directed at agriculture, resulting from several years of collaboration and meeting with likely affected parties and interested stakeholders.

In developing the CWAD, Santa Ana Water Board staff coordinated with San Jacinto watershed stakeholders, principally through a core group of agricultural operators that formed the Western Riverside County Agriculture Coalition (WRCAC), a voluntary not-for-profit organization. Santa Ana Water Board staff also facilitated a CWAD Advisory Committee that includes representatives from the Riverside County Farm Bureau, UC Cooperative Extension, WRCAC, the US

Natural Resources Conservation Service, and others.

During fiscal year 2015-2016, Santa Ana Water Board staff completed the draft Conditional Waiver and presented it to stakeholders. The CWAD and draft Negative Declaration were also posted on the Santa Ana Water Board website for public review and comment. Many members of the public and stakeholder groups reviewed the draft CWAD, and made recommendations following a July 2015 Advisory Group meeting, and a public workshop/information session at a Santa Ana Water Board meeting. Board staff considered all comments received in revising the CWAD. Among the recommendations was the proposal to include in the revised draft CWAD animal operations other than livestock, are less than 20 cumulative acres, and also maintain an animal density of more than three animal units per acre.

The CWAD is the primary mechanism to help manage pollutants loads to surface and ground water from agricultural operations not already regulated by the Santa Ana Water Board. Those who discharge waste from irrigated lands, livestock operations, dry-land farming and fallow land are required to enroll in the CWAD. The CWAD will implement the Regional Salt Management Plan and State Nonpoint Source Implementation and Enforcement Policy. The CWAD will require agricultural owners/operators to conduct monitoring of nutrients, total dissolved solids (TDS) and pesticides in surface and ground waters, and sediment in surface water to measure reductions of loadings from the agricultural operations. The CWAD also specifies a reporting program to assess discharger compliance and agricultural best management practices (BMPs) effectiveness.

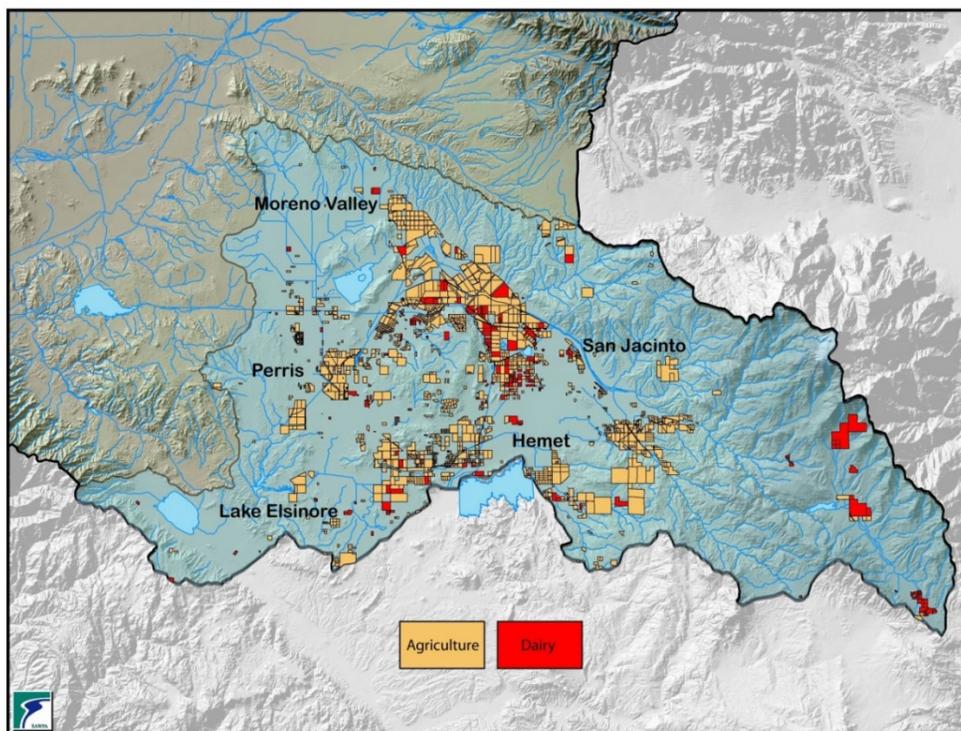


Figure 9: San Jacinto River Watershed and Agriculture (2012)

In addition to developing the CWAD, Santa Ana Water Board staff identified potential CWAD enrollees. Santa Ana Water Board staff used the results from Areal Information Systems 2014 areal mapping project (that was developed for WRCAC) to help identify agricultural parcel owners in the San Jacinto watershed that would be required to enroll in the CWAD after adoption (Figure 9). According to 2014 mapping, there are approximately 59,000 acres of agriculturally zoned land and up to 185 potentially eligible enrollees in the San Jacinto Watershed that will be covered under the Conditional Waiver. Upon Santa Ana Water Board adoption of the CWAD, staff will seek to attain at least 20 percent enrollment in the Conditional Waiver that meet enrollment criteria. Staff also prepared an electronic Notice of Intent enrollment (eNOI) form, based on watershed-based specific needs, which allows agricultural operators/dischargers to submit required reports as needed. Dischargers will then be provided with an account and password to allow them to log directly into their individual accounts in order to submit reports or update conditions within their agricultural facility, as necessary.

Santa Ana Water Board staff decided to hold an informational workshop at the June 10, 2016 Santa Ana Water Board meeting so that agricultural representatives could present to the Santa Ana Water Board members and the public some of the work they are already conducting to address water quality issues. WRCAC received a conservation grant that is being used to develop information on hydrologic conditions resulting



Figure 10: Farmland in the San Jacinto River Watershed

from enrollee operations in support of the Healthy Soils Initiative, BMP evaluation and monitoring for pollutant load reductions. The products will assist in obtaining baseline information about the quantity, quality, and timing of runoff discharges from the enrollee's operations. Finally, Santa Ana Water Board staff anticipated that the Santa Ana Water Board would consider the Conditional Waiver during the summer of 2016, and it was adopted on July 29, 2016.

During fiscal year 2015-2016, the San Diego Regional Water Quality Control Board (San Diego Water Board) used its CWA §319 program resources primarily for addressing agriculture and nursery activities, including development of region-wide general WDRs for such activities. The San Diego Water Board is scheduled to consider adoption of the general WDRs and associated CEQA documentation in November 2016. If adopted, the general WDRs will require commercial agricultural operations to prevent or reduce discharges of pollutants associated with agricultural activity such that these discharges do not cause or contribute to pollution and nuisance conditions in surface waters or groundwater. It is anticipated that regulated agricultural operations will be required to adopt management practices to reduce or eliminate polluted runoff, and to participate in a monitoring and assessment program to evaluate the impacts of agricultural activities to waters of the state.

One of the main tasks for San Diego Water Board's Commercial Agriculture Regulatory Program is public outreach. The Board has engaged stakeholders and the public through stakeholder meetings, public workshops, individual meetings, and the San Diego Water Board Commercial Agriculture Regulatory Program webpage. This robust outreach not only furthers the Proactive Public Outreach and Communication element of the [San Diego Water Board's Practical Vision strategy](#), it has also provided frequent opportunities for stakeholders and the public to meet with San Diego Water Board staff to provide their input. The public outreach has also provided San Diego Water Board staff with the opportunity to discuss why the general agriculture and nursery WDRs are needed and to encourage the agricultural community to enroll in and comply with the general WDRs once they are adopted. During fiscal year 2015–2016, six public workshops were conducted.

Nutrient Source Reduction Program in the Rainbow Creek Watershed

On June 1, 2016, the County of San Diego submitted the final report for the Clean Water Act Section 319(h) Grant, Grant Agreement No. 12-412-259 for Nutrient Source Reduction in the Rainbow Creek Watershed. Grant funding was used by the County of San Diego to conduct the following activities consistent with the Rainbow Creek TMDL implementation Plan:

- Agricultural Property Evaluation and BMP Rebate Program: Assisted thirty-eight agricultural properties with implementing structural and non-structural BMPs to reduce loading of nutrients into the Rainbow Creek Watershed. The assistance included site evaluations and participation in a rebate program to offset the cost of additional structural and non-structural BMPs.
- Agricultural Property Outreach and Education: Conducted two agricultural property outreach and education workshops that provided agricultural operators with information on how to reduce nutrient loading into the Rainbow Creek Watershed. The workshops were attended by 253 participants.
- Residential Property Evaluation and BMP Program: Conducted Residential Property Evaluations at twelve parcels located within the Rainbow Creek Watershed. The assessment provided residential properties with information to help reduce nutrient pollution through structural and non-structural BMP implementation.

- Residential Property Outreach and Education: Conducted eight Residential Property Outreach and Education workshops to inform residents of structural and non-structural BMP implementation opportunities. Each workshop began with a review of the importance of water quality and information on the Rainbow Creek Nutrient TMDL. The workshops were attended by 365 participants.
- Online Septic System Maintenance Training and BMP Rebate Program: Created an online training course that educated participants about proper septic system maintenance. Residents that completed the online training were also eligible for a rebate on septic pumping expenses by a licensed professional. Thirty residents implemented the septic pumping and were awarded rebates during the grant period.
- Septic System Outreach and Education: Conducted two workshops informing residents about the proper operation and maintenance of onsite wastewater treatment systems (OWTS). The workshops were attended by 97 participants.
- Enhancement of Nutrient Reduction Management Plan (NRMP): Developed an enhanced NRMP.
- Water Quality Monitoring: Conducted surface water monitoring at 13 locations within the Rainbow Creek Watershed.

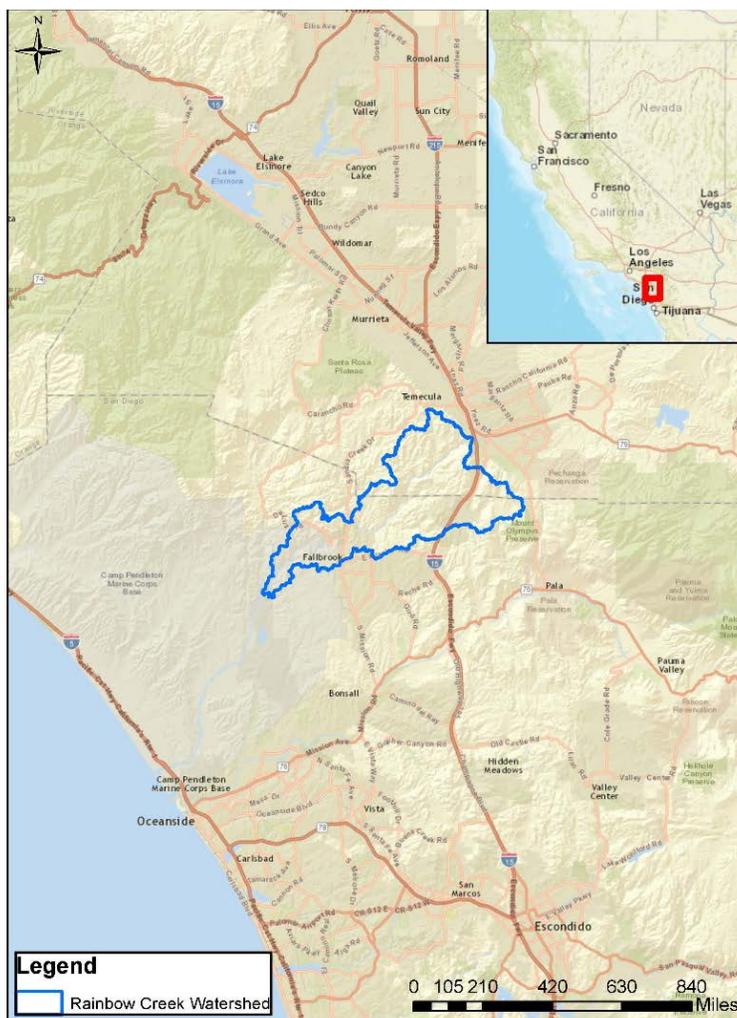


Figure 11: Rainbow Creek Watershed

The County of San Diego also developed a Best Management Practice Load Reduction Calculator (BMP Calculator) that was used to estimate load reductions from the various types of BMPs implemented. The BMP Calculator was used to estimate load reductions associated with BMP implementation from two programs - the Agricultural Property Evaluation and BMP Rebate Program, and the Residential Property Evaluation and BMP Program. The BMP Calculator analyzed each BMP for reductions in runoff volume, total nitrogen, total phosphorus, and total suspended solids (TSS). Table 3 and Table 4 present the estimated load reductions to be achieved by the parcels that participated in the Agricultural Property Evaluation and BMP Rebate Program and the Residential Property Evaluation and BMP Program.

Table 3: Estimated Loading and Pollutant Load Reductions from Agricultural Property BMP Implementation

| Pollutant | Baseline Loads from Parcels | Estimated Load Reductions from BMPs | Resultant Load | Percent Reduction |
|---------------------------------|-----------------------------|-------------------------------------|----------------|-------------------|
| Runoff Volume (cubic feet/year) | 15,923,782 | 4,193,633 | 11,730,149 | 26% |
| Total Nitrogen (kg/year) | 9,439 | 1,533 | 7,906 | 16% |
| Total Phosphorus (kg/year) | 579.2 | 41.7 | 537.6 | 7% |
| TSS (kg/year) | 206,443 | 24,742 | 181,701 | 12% |

Table 4: Estimated Loading and Pollutant Load Reductions from Residential Property BMP Implementation

| Pollutant | Baseline Loads from Parcels | Estimated Load Reductions from BMPs | Resultant Load | Percent Reduction |
|---------------------------------|-----------------------------|-------------------------------------|----------------|-------------------|
| Runoff Volume (cubic feet/year) | 1,106,930 | 124,275 | 979,656 | 11% |
| Total Nitrogen (kg/year) | 177 | 24 | 152 | 14% |
| Total Phosphorus (kg/year) | 9.4 | 0.6 | 8.8 | 65 |
| TSS (kg/year) | 11,293 | 464 | 10,830 | 4% |

Grazing

On September 16, 2015, the State Water Board adopted resolution 2015-0062 to discontinue discussions about developing a statewide approach for addressing water quality impacts from livestock grazing. The resolution directed Regional Water Boards to work with livestock operators and interested stakeholders on approaches to address water quality impacts from livestock grazing. The resolution also encouraged the establishment of monitoring requirements in any approaches that are developed.

Coordination with United States Forest Service (USFS)

The North Coast Region is currently addressing impacts from livestock grazing on a case-by-case basis, and assessing whether a regional approach is needed. On October 9, 2015, the North Coast Water Board adopted a revised [Waiver of Waste Discharge Requirements for the USFS](#) to address

grazing-related discharges and other NPS discharges from USFS lands. The waiver includes new [monitoring requirements](#) to assess potential impacts from USFS grazing allotments and the effectiveness of grazing-related management practices. The new requirements include monitoring for fecal indicator bacteria levels, streambank stability and erosion, riparian vegetation, and potential physical and vegetation impacts to wetlands and wet areas.



Figure 12: Shasta River with riparian fencing, March 9, 2016

The Central Valley Water Board is also coordinating with the USFS. Central Valley Water Board staff regularly provides comments on draft Environmental Impact Statements (EIS) for activities that have the potential to affect water quality, including rangeland allotment reauthorization. For example, in 2014 staff provided comments on the draft EIS for the proposed reauthorization of the Bell Meadow, Eagle Meadow, and Herring Creek rangeland allotments in the Stanislaus National Forest (SNF), and continued dialogue in 2015 and 2016 with the USFS, resource groups such as the Central Sierra Environmental Resource Center, and University of California researchers about monitoring data and selection of alternatives for management practices that protect water quality while still providing livestock operators with viable options for continued livestock grazing.

Scott and Shasta River Watersheds

North Coast Water Board staff continued to address water quality impacts from beef cattle grazing in the Scott and Shasta River watersheds. Staff assessed two ranches with cattle grazing operations in the Scott Valley and one ranch in the Shasta Valley to determine compliance with the [Scott River TMDL Conditional Waiver of Waste Discharge Requirements](#) and the [Shasta River TMDL Conditional Waiver of Waste Discharge Requirements](#). Riparian fencing, riparian grazing, pasture irrigation, tailwater management, feeding areas, pesticide use, and other ranch management practices were observed and discussed with the owner/operator. Staff will complete assessment reports in fiscal year 2016-2017.



Figure 13: Grazing in Tomales Bay Watershed

Tomales Bay and Napa/Sonoma Watersheds

The San Francisco Bay Water Board continued implementing two waivers of WDRs for grazing operations in the Tomales Bay watershed (2013 Tomales Bay Waiver), and in the Napa River and Sonoma Creek watersheds (2011 Napa/Sonoma Waiver). Both waivers require discharges from grazing operations be managed to implement sediment and pathogen TMDLs. Ninety-nine (99) landowners, encompassing 258 land parcels that cover 76,940 ranching acres are enrolled under the Tomales Bay Waiver, which comprises approximately two-thirds of the land area of the Tomales Bay watershed. By contrast, the Napa/Sonoma Waiver is a much smaller program, consisting of 34 landowners that comprise 142 land parcels and 22,382 acres.

Implementing the two waivers in the San Francisco Bay Region included coordinating with agencies and stakeholders, developing a communications and outreach strategy, and conducting 31 wet and dry weather ranch inspections. The inspections found that ranchers, in response to the prolonged drought resulting in less available forage, reduced herds and modified grazing rotations. Staff did not identify major enforcement concerns during the inspections. San Francisco Bay Water Board staff also collaborated with the Tomales Bay Watershed Council to continue implementing the long-term water quality monitoring program in the Tomales Bay Watershed. Collaborative monitoring began in the 2015-2016 wet season; results will be used to inform next year's monitoring.

Marin County “Conserving our Watersheds” Program

The Conserving our Watersheds (COW) program was created by the Marin Resource Conservation District (MRCD) to assist ranchers with the planning and implementation of conservation practices to improve water quality and wildlife habitat. MRCD was able to continue the COW program with a third round of contract funding in 2011. The third phase of this program was completed this year.

The COW program implemented the Tomales Bay pathogen TMDL and the Grazing Waiver (Resolution R2-2013-0039, 12/13/2013). Agricultural producers within the Tomales Bay and Walker Creek watersheds participated in earlier grants, COW I and II, and continued to show interest in undertaking restoration and enhancement projects at eroded and degraded water quality sites by participating in COW III. The COW III program encouraged participation from ranchers in implementing proactive conservation solutions to improving water quality through

developing and implementing ranch plans. This program enabled MRCD to offer assistance, both financial and cooperative, to ranchers in West Marin. The COW III grant funds included \$625,092 (319(h)) and \$512,585 match for total of \$1,137,677. COW III had considerable construction match provided by the State Coastal Conservancy (SCC) and United States Department of Agriculture's Natural Resources Conservation Services' Environmental Incentives Program (NRCS EQIP).

COW III implemented 34 BMPs to improve water quality and habitat at eight project sites located on seven different ranches located within Tomales Bay's East Shore and Walker Creek's subwatershed, Keys Creek. The COW III program installed over 32,362 linear feet of fencing and developed five alternative water sources because installed riparian fence excluded livestock from accessing their original water source (the creek). Additionally, MRCD constructed: one lined waterway, two stream crossings, sixteen grade stabilization structures (stabilizing 2 large gullies and numerous smaller ones), numerous troughs, tanks, solar pumps, and two acres of riparian areas were revegetated/planted. The addition of this funding brings the cumulative number of BMPs completed for the COW program, Phases I-III to 115. The practices implemented within the Keys Creek watershed were selected with the intention of reducing pathogen loading into Keys Creek, a watershed that repeatedly exceeds fecal coliform targets. In addition to reducing pathogen loading, the completed practices will reduce sediment runoff and nutrient loading.



Figure 14: Pre-construction photo, left (1/2012) and post-construction photo, right (1/2015) – upstream view before and after riparian fence, grade stabilization, and revegetation

Projects were selected through a Technical Advisory Committee (TAC) process. The TAC was comprised of professionals with backgrounds in: rangeland management, fisheries biology, engineering, watershed advisory, water quality, revegetation, planning, design, permitting, and hydrology. Leslie Ferguson, Water Board staff engineer with a background in fisheries biology, has participated on all of the COW TACs. The various expertise of the TAC members enabled them to collectively review and evaluate design solutions and allow agency staff to participate in the design of projects to ensure permit requirements were met. The project selection process includes; 1) MRCD advertises through numerous media forms to the ranchers of the availability of funds; 2) MRCD vets the applications and selects those that meet the pre-determined selection criteria; 3) TAC tours and ranks all sites based on selection criteria; 4) MRCD Board reviews TAC recommendations and makes final selection of projects/sites.

COW III Notable Achievements:

- 34 best management practices implemented
- Seven ranches assisted
- Over 32,362 linear feet of riparian fencing installed

- 14,189 linear feet riparian stream protected
- 1,946 linear feet of streambank repaired
- 1,097 plants installed
- 2 large gullies and numerous small gullies stabilized
- 21 species of native grasses, shrubs and trees planted
- 60 - 90% reduction in pathogen loading due to installed practices

Overall, projects completed through the COW III program are estimated to reduce project site pathogen loads by 60-95% and prevented 226 tons per year of sediment from entering the Tomales Bay watershed. On-going long-term Water Board and Tomales Bay Watershed Council pathogen monitoring in Keyes and Walker Creek will demonstrate how effective these projects have been.



Figure 15: Pre-construction photo, left (2/2013) and post-construction photo, right (6/2015). The pre-construction photo shows a view of a livestock culvert crossing and active side gully headcutting. The post-construction photo shows a riparian fence encompassing the gully headcut and bordering a livestock culvert crossing repair.

Table 5: Practices Implemented through Conserving Our Watershed Phase III

| CODE | PROJECTS COMPLETED 2012-2015 | Conservation Practice (CP) | # CP Installed | Best Management Practice (BMP) | BMP count | Total BMPs |
|----------|---|-------------------------------|----------------|--------------------------------|-----------|------------|
| 2013.001 | <i>Gully Repair, Erosion Control, Revegetation and Fencing Project</i> | CRITICAL AREA PLANTING | 2 | CRITICAL AREA PLANTING | 1 | 8 |
| | | FENCING | 1 | FENCING | 1 | |
| | | GRADE STABILIZATION STRUCTURE | 7 | GRADE STABILIZATION STRUCTURE | 2 | |
| | | LINED WATERWAY INLET/ OUTLET | 1 | LINED WATERWAY INLET/OUTLET | 1 | |
| | | STREAM CROSSING | 1 | STREAM CROSSING | 1 | |
| | | STREAMBANK STABILIZATION | 1 | STREAMBANK STABILIZATION | 1 | |
| | | STRUCT. FOR WATER CONTROL | 1 | STRUCT. FOR WATER CONTROL | 1 | |
| 2013.004 | <i>Riparian Planting, Livestock Fencing and Water Development Project</i> | CRITICAL AREA PLANTING | 1 | CRITICAL AREA PLANTING | 1 | 7 |
| | | FENCING | 2 | FENCING | 2 | |
| | | STREAMBANK STABILIZATION | 1 | STREAMBANK STABILIZATION | 2 | |

| CODE | PROJECTS COMPLETED 2012-2015 | Conservation Practice (CP) | # CP Installed | Best Management Practice (BMP) | BMP count | Total BMPs |
|--------------------|---|-------------------------------|----------------|--------------------------------|-----------|------------|
| | | PIPELINE | 2 | WATER DEVELOPMENT | 2 | |
| | | SOLAR PUMP | 2 | | | |
| | | TANK | 2 | | | |
| | | TROUGH | 6 | | | |
| 2013.005 | <i>Riparian Fencing and Water Development Improvement Project</i> | FENCING | 1 | FENCING | 1 | 4 |
| | | SPRING DEVELOPMENT | 3 | WATER DEVELOPMENT | 3 | |
| | | PIPELINE | 1 | | | |
| | | TANK | 2 | | | |
| | | TROUGH | 3 | | | |
| 2013.006 | <i>Livestock Exclusion Fencing and Gully Repair Project</i> | CRITICAL AREA PLANTING | 5 | CRITICAL AREA PLANTING | 3 | 11 |
| | | FENCING | 1 | FENCING | 1 | |
| | | GRADE STABILIZATION STRUCTURE | 9 | GRADE STABILIZATION STRUCTURE | 4 | |
| | | STREAMBANK STABILIZATION | 1 | STREAMBANK STABILIZATION | 1 | |
| | | STREAM CROSSING | 1 | STREAM CROSSING | 1 | |
| | | OBSTRUCTION REMOVAL | 1 | OBSTRUCTION REMOVAL | 1 | |
| 2013.007 | <i>Vegetative Field Buffer and Fencing Project</i> | CRITICAL AREA PLANTING | 1 | VEGETATIVE FIELD BUFFER | 1 | 3 |
| | | FIELD BUFFER | 1 | | | |
| | | FENCING | 1 | FENCING | 1 | |
| | | HEDGEROW | 1 | HEDGEROW | 1 | |
| 2015.011 | <i>Riparian Fencing Project</i> | FENCING | 1 | FENCING | 1 | 1 |
| GRAND TOTAL | | | 63 | | 34 | |

Los Angeles Region Grazing TMDLs

The grazing program in the Los Angeles Region focuses on addressing direct and indirect impacts of grazing activities. While cattle grazing can have an impact on pollutant loading, the impacts are indirect and can be difficult to quantify. For example, when cattle are allowed to graze directly on streambanks, the bank structure can be destabilized, causing soil erosion and associated nutrient loading into the stream. The loss of riparian vegetation also reduces shade and the buffering capacity of the stream. Finally, the loss of riparian vegetation and weakened streambanks decreases the depth and increases the width of the stream, which can increase its temperature. Such indirect effects impact the amount of pollutant loading to the stream and the stream's ecological response to the pollutant loading. The impacts will vary considerably depending on site-specific conditions such as vegetation cover, grazing density, proximity to the stream, and period of use.

There are three TMDLs in the Los Angeles Region that assign load allocations to grazing operations: the Malibu Creek Watershed Nutrients TMDL adopted by US EPA in 2003, the Malibu Creek and Lagoon Sedimentation and Nutrients TMDL adopted by US EPA in 2013, and the Ventura River Algae TMDL adopted by the Los Angeles Water Board in 2012. The grazing program in the Los Angeles Region focuses initially on initially on implementing the Ventura River Algae TMDL.

The Ventura River Algae TMDL assigns load allocations for nutrients to grazing activities in the Ventura River Watershed. The Los Angeles Water Board has estimated 1950 cattle in the Ventura River watershed. The TMDL states that the load allocations will be regulated by WDRs, waivers of WDRs, or other regulatory mechanisms in accordance with the Nonpoint Source Policy. The load allocations are based on a 10% reduction of the existing load, and the TMDL requires grazing activities to conduct monitoring or use other acceptable data or studies as approved by the Executive Officer to determine baseline pollutant loading caused by grazing activities. Baseline monitoring may consist of water quality monitoring of sites impacted by grazing and compared to water quality monitoring from unimpacted natural background sites. If it is determined that there are no water quality impacts due to pollutant loading from grazing in the Ventura River

watershed, then the TMDL may be revised to adjust the source assessment and allocation scenario when the TMDL is reconsidered. If it is determined that there are water quality impacts due to pollutant loading from grazing in the Ventura River watershed, then the TMDL requires grazing activities to develop management plans for approval by the Executive Officer and to implement management measures identified in management plans in order to attain



Figure 16: Cattle grazing in the Ventura River Watershed (Photo Credit: Santa Barbara Channelkeeper)

load allocations. Compliance with load allocations will be demonstrated with discharge monitoring approved by the Executive Officer. Discharge monitoring may consist of documentation of no discharge due to BMP implementation, and may include water quality monitoring during conditions under which discharge may occur, including wet weather. The following are the TMDL deadlines for grazing activities:

- Submit baseline monitoring plan or acceptable existing data or studies to determine pollutant loading by June 28, 2015.
- Submit results of baseline monitoring, if necessary, within 18 months after Executive Officer approval of baseline monitoring plan.
- Submit discharge monitoring plan as part of waiver, WDR, or other regulatory mechanism requirement or in response to Regional Board order by June 28, 2018
- Conduct receiving water monitoring or join coordinated watershed-wide monitoring program to assess overall TMDL progress by June 28, 2023.

- Attain load allocations by June 28, 2023.

Los Angeles Water Board staff has begun to develop the regulatory mechanism to implement loading allocations for grazing activities. The Ventura County Cattleman's Association (VCCA) has been an active stakeholder and has taken the lead in helping grazing operations in the Ventura River Watershed comply with the TMDL requirements. Los Angeles Water Board staff has met with VCCA members several times prior to and since the TMDL adoption to discuss TMDL implementation. The VCCA submitted a baseline monitoring plan in compliance with the TMDL on June 25, 2015. Los Angeles Water Board staff is currently reviewing the plan.

Central Valley Region

The Central Valley Water Control Board is developing a new draft General Order of Waste Discharge Requirements for timber harvest and related forest management activities on federal and non-federal lands. The order may include grazing operations in addition to timber harvest operations. Public meetings were held in late 2015 and early 2016 to discuss the new draft General Order. Staff expects to present a final draft to the Board for consideration of adoption in early 2017.

The Central Valley Water Board staff is also involved with data assessment for the Clean Water Act (CWA) Section 303(d)/305(b) Integrated Report assessment process. They included data on the potential effects of grazing on water quality in the Stanislaus National Forest (SNF). The assessment uses methods outlined in the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* and indicates several SNF creeks have fecal coliform and *E. coli* concentrations that periodically exceed water quality objectives. Staff identified such creeks on their proposed CWA Section 303(d) list of impaired waterbodies and will present their proposed 303(d) list through a public hearing process to the Central Valley Water Board in late 2016 for their consideration for adoption with subsequent review and consideration for approval by the State Water Board and U.S. Environmental Protection Agency. Inclusion of impaired creeks on the 303(d) list commits the Central Valley Water Board to developing a plan to address the impairments. Efforts to develop any such plan would be coordinated with development of the NPS permit described above, the USFS, landowners and operators of grazing operations, academia, resource groups, and other stakeholders.

Bridgeport Grazing Waiver

Lahontan Water Board staff continued to work with members of the Bridgeport Ranchers Organization (BRO) on implementation of the Bridgeport Valley Grazing Waiver. A new permit for ranch and water quality management in the Bridgeport Valley is under preparation for Water Board consideration in 2017.

In 2015, enrollees reported spending \$150,000 (for a total of \$964,000 since 2006) on grazing management practices and structural improvements in the Bridgeport Valley. Management Practices included stock rotation, salt placement, improved fencing, filter strips, increased herding, limited pasture, armoring stream crossings, off-stream watering, stream exclusion fencing, wetland enhancement, irrigation tail water recovery, and contour borders. Stream exclusion fencing and improved fencing were the largest capital improvements at \$375,000 and \$179,000, respectively since 2006. Future planned capital improvements at the cattle ranches include: Three tail water retention ponds (\$30,000); Installation of 3000 linear feet of exclusion fencing (\$5,000); Construction of two additional stream crossings (\$10,000).

Water Board staff met with members of the BRO on March 7, 2016 to discuss implementation of grazing management practices, and future strategies for water quality improvements. A second meeting occurred on May 17, 2016 to discuss a watershed approach for coordinating grazing management practice implementation between enrolled ranches in Bridgeport Valley. Staff anticipates more interaction with the BRO during the coming year as a new permit for ranch and water quality management in the Bridgeport Valley is prepared for Water Board consideration in 2017.

Technical and Financial Assistance to Address Grazing Impacts.

Lahontan staff participated in four California Board of Forestry Range Management Advisory Committee meetings to discuss Lahontan Water Board approaches and involvement in updated rangeland water quality management plans for private ranching operations.

Staff has engaged with the Los Angeles Department of Water and Power (LADWP) staff to discuss monitoring data and regulatory approaches to grazing operations on LADWP lands. Water quality monitoring data has shown that there are water bodies that flow through LADWP lands that have elevated levels of fecal bacteria contamination. LADWP and Water Board staff are working together to address this issue on both a grazing allotment and watershed basis.

Multiple meetings with USFS Regional Hydrologist and Regional Range Officers, as well as hydrology and range line officers from multiple National Forests (Modoc, Lassen, Plumas, Tahoe, Lake Tahoe Basin Management Unit, Shasta-Trinity, Mendocino, El Dorado) to develop a framework for a federal Nonpoint Source permit to address NPS pollution from USFS lands in the Lahontan Region.

Lahontan Water Board staff has also engaged with BLM, CA State Office Division of Natural Resources director to develop a framework for a federal Nonpoint Source permit to address NPS pollution from BLM lands in the Lahontan Region.

Lahontan Water Board staff has had significant interaction with Central Valley Regional Water Board staff (bi-weekly phone calls or in person meetings) to develop an understanding of their approach as they develop a federal Nonpoint Source permit for USFS and BLM activities in the Central Valley Region. This interaction is intended to ensure that the policies developed by the Lahontan and Central Valley Water Boards are uniform and/or distinct in order to provide adequate water quality protection while recognizing the differences in resource needs, land use, climate, and topography between the regions.

Staff completed implementation of Proposition 84 Agriculture Water Quality Grant (aka "Rivers and Ranches" grant) and began process to close-out the grant (e.g., reviewed draft final report and planned final public outreach event for Fall 2016.) Staff also planned a project tour for the Lahontan Water Board members for May 2016. The grant funds were used to assist the landowner in the design and implementation of multiple grazing management practices to reduce pathogen and nutrient loading in the West Fork of the Carson River. Some of the practices implemented at the ranch include exclusion fencing, vegetative buffers, bridge crossing for cattle, irrigation ditch repair, and watering pond construction away from the river.

Bacteria Monitoring in the Lahontan Region

Based on the results of ongoing field sampling in the Lahontan Region, revisions to federal criteria for recreational waters and a proposed State Water Board policy to incorporate the use

of *Escherichia coli* (*E. coli*) as an indicator, revisions to the Lahontan Basin Plan may be proposed. The current Lahontan Region objective is 20 coliform forming units (cfu) of fecal coliform per 100 milliliters (ml). State Board anticipates a 2016 or early 2017 release of its draft bacteria water quality objective using *E. coli* as an indicator instead of fecal coliform, as *E. coli* has been found to be the most reliable indicator organism in all fresh waters. The water quality objective will be specific to the REC-1 (Water Contact Recreation) beneficial use. The draft objective, based on a 2012 USEPA recommendation, will be higher than the fecal coliform objective in the Lahontan Basin Plan. It is not yet clear how Lahontan will be asked to apply the new water quality objective in the Lahontan Region, as the Region's current objective is not explicitly linked to a beneficial use. Lahontan Water Board staff will review the State Water Board proposal when released and develop a strategy to comply with State Water Board direction while still maintaining protection of the Lahontan Region's many high quality waters.

In June 2015, Roland Knapp, Ph.D. with the University of California's Sierra Nevada Aquatic Research Laboratory, Center for Eastern Sierra Aquatic Microbial Ecology (CESAME) reported to the Lahontan Water Board on his work that investigated the spatial and temporal patterns of fecal indicator bacteria (FIB) concentrations in streams in the eastern Sierra Nevada portions of the Lahontan Region. The work performed under the contract (1) utilized traditional and modern methods for measuring various bacterial indicators in surface water, and (2) applied statistical analysis to landscape-scale variables and site-specific data to determine the primary drivers of FIB concentrations. Traditional measurements of FIB based on over 700 samples collected throughout the study area indicated that *Escherichia coli* (*E. coli*) concentrations were generally low, typically less than 20 colony forming units (CFU) per 100 milliliters (mL). Areas that exhibited bacterial levels greater than 100 CFU/ml included Bridgeport Valley, Owens River above Crowley Reservoir, Round Valley, and in and around the City of Bishop. Modern measurements of FIB that rely on quantitative polymerase chain reaction (qPCR) methods were used to identify the primary sources of FIB in 165 samples collected from streams in the study area. Microbial Source Tracking (MST) assays were applied to analyze the DNA extracted from bacterial cells collected from filtered water samples. Bacterial cells were compared to assays that targeted general bacterial groups found in vertebrate species and specific subgroups associated with ruminants (which include cattle, goats, sheep, and deer) and humans. MST results showed that fecal bacteria attributable to ruminants were widespread throughout the study area. Additionally, ruminants were a more significant source of the measured fecal contamination than were humans. The source of the fecal bacteria measured in the multiple samples collected in and around the City of Bishop was also dominated by ruminant sources even though human development and cattle grazing are intermixed. Statistical analysis and modeling determined that the presence or absence of livestock had the strongest effect on *E. coli* concentrations. Other primary landscape-scale drivers (land use, elevation, precipitation amount, presence/absence of an upstream waterbody, day of year) had a significant effect on FIB concentrations, but none as strong of a predictor as the presence or absence of livestock upstream of the sampling location. This research provides an important step toward evaluating the spatial and temporal variation in water-borne fecal bacteria throughout the region and identifying sources of contamination. Additional contract work being conducted by CESAME plans to (1) test a broader set of source-specific MST assays to determine the extent to which other sources contribute to the concentrations of fecal bacteria, and (2) test additional ruminant assays to evaluate their specificity on the Sierra Nevada landscape.

Healthy Watersheds

Central Coast Region

Central Coast Water Board staff has been working since 2007 on a “Healthy Watersheds” vision for the California Central Coast. As part of this effort, staff established three measureable goals related to healthy aquatic habitat, proper land management, and safe human uses. To assess progress made toward achieving these goals, the Central Coast Ambient Monitoring Program (CCAMP) has developed a new web-based tool for synthesizing data from multiple sources into measures of “health.” This tool provides a unique new way to view complex data in a user-friendly environment that allows the user to quickly understand where streams are healthy, and if not healthy, why not.

The California Central Coast Healthy Watersheds Project utilizes measured and modeled data in a web mapping environment to assess the health of our watersheds. CCAMP created these tools to generate report cards that quickly convey water quality and habitat conditions for sites, waterbodies and watersheds. Report cards are based on measurements for a large number of

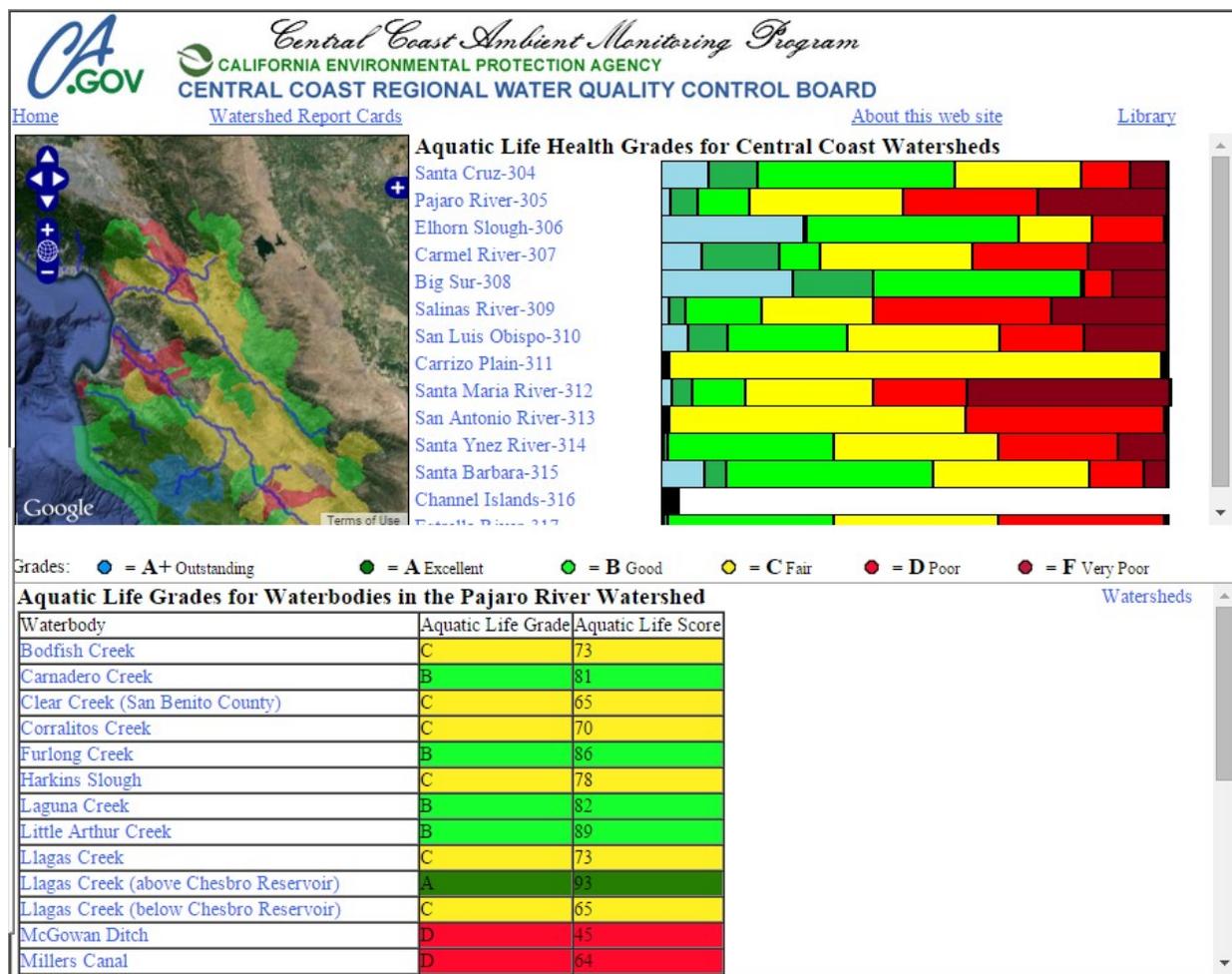


Figure 17: Screenshot from the Healthy Watersheds website (www.ccamp.org)

parameters assessed relative to specific aquatic life and human health thresholds. The web

application allows the user to drill in with increasing levels of detail to identify the locations and causes of water quality problems, and to relate the observed conditions to associated data trends and land management activities.

The data navigator and report card systems are available at www.ccamp.org and provide resource managers, decision makers and the public with immediately available and easily understood information on aquatic resource conditions. The website opens with high level overview maps and index scores that the user can quickly survey to find problem areas or results of interest. Users can then drill down through maps and scores to easily get detailed information on specific parameters and trends. Underlying data sets can be directly downloaded for additional analysis. This system represents a substantial and meaningful improvement over previous database outputs and query tools that require detailed, technical and advance knowledge of problem sites and parameters in order for the user to begin searching for relevant data. Figure 17 shows an example of this interactive approach to data viewing.

There are seven primary objectives for this CCAMP automated report card system and data navigator:

- To identify appropriate, scientifically defensible and institutionally accepted thresholds against which to compare measurement parameters to determine levels of watershed health
- To build on previously established water quality index algorithms to translate data into threshold-based scores for each measured parameter and field sampling site
- To build on previously established rules to translate scores into letter grades and chart colors for immediate interpretation of monitoring results
- To aggregate individual parameter scores into higher level indices that provide broad indicators of watershed health and human health risk
- To analyze and visually display change in conditions over time
- To develop geospatial linkages between monitoring sites and stream reaches so that appropriate scores can be assigned to catchments and watersheds
- To combine monitoring-based indices with remotely sensed geospatial datasets and predictive models to holistically characterize watershed condition and associated land management

Salinas River 2016-2025 Stream Maintenance Program

Monterey County Water Resources Agency (MCWRA) is seeking Clean Water Act (CWA) Section 401 Water Quality Certification (Certification) for the Salinas River 2016-2025 Stream Maintenance Program (Project). Pursuant to CWA Section 401, the Central Coast Water Board must certify that the Project protects beneficial uses and meets water quality objectives. In so doing, the Central Coast Water Board establishes conditions to protect beneficial uses and mitigate unavoidable impacts of the Project. This Project is the most comprehensive riparian management program ever conducted in our Region. The following are some key elements of the Project:

- The Project covers 92 miles of the Salinas River.
- The total vegetated area along the 92 miles of River reach is 12,400 acres. The potential area of disturbance for flood control purposes is limited to about 864 acres. This is a significant improvement over previous flood control management efforts, which removed up to 2,349 acres of vegetation (without controls or mitigation).
- The Project design uses a science-based approach that provides flood reduction benefits while ensuring environmental protection. This design approach is a significant improvement for water quality and beneficial use protection compared to previous flood

control efforts. The Project design optimizes impact avoidance and provides compensatory mitigation. Developed in partnership between MCWRA, The Nature Conservancy, the RCD, regulatory agencies, growers, and other stakeholders, the design mimics the historic braided channel form of the Salinas River.

- Unlike previous flood control efforts, this Project limits vegetation removal and mitigates vegetation removal by planting replacement vegetation of equal or better value or by removing arundo. Arundo is an invasive species that overwhelms riparian areas, reducing habitat function and diversity.
- Arundo also takes up vast amounts of water. The Project has the potential to result in a water savings of approximately 7,320 acre-feet per year (even if all arundo removal areas are allowed to regrow with native riparian species).
- The Project includes comprehensive monitoring and reporting to evaluate performance, protection of beneficial uses, and adaptive management.
- Project development has included extensive public outreach and stakeholder input.
- The Project is on schedule to be approved by the Executive Officer and implemented in time for the coming rainy season.

The objective of the Project is to increase the flow capacity of the Salinas River to reduce flood risk to surrounding lands. The Project involves targeted vegetation and sediment management activities performed annually over a ten-year period within the Salinas River and several tributaries, between the Highway 1 bridge (river mile 2.0) and river mile 94 (south of San Ardo).

The Project may disturb a maximum of 863.7 acres of the Salinas River and tributaries. The permit term will be ten years, and Staff will reassess the Project's implementation and effectiveness after five years, and consider modifications to the Certification. The Project is the latest in a series of programs and proposals for channel maintenance in the Salinas River. The Project is a significant improvement for water quality and beneficial use protection compared with these previous programs and proposals. The following are examples of significant improvements:

- The Project incorporates a system-wide and science-based approach that coordinates maintenance activities along the length of the river to achieve consistent flood reduction benefits in a manner that protects environmental value and function.
- The Project design and program management approach incorporate elements to avoid and/or reduce environmental impacts. Maintenance areas were specifically located and designed to provide flood risk reduction while minimizing impacts to high value habitat and water quality.
- The Project includes mitigation for impacts to high-value habitat, including extensive removal of invasive arundo.
- The Project will include a comprehensive monitoring program that includes assessment of long-term impacts and benefits.

The Project, as conditioned in the Certification, adequately achieves both the Project's flood risk reduction objective and the protection and minimization of impacts to beneficial uses and water quality as required by the Central Coast Water Board. In addition, the Project achieves these ends through a collaborative and science-based process. Staff anticipates that the Project will result in an overall improvement in riparian habitat function in the Salinas River.

Staff expects that the final Certification will be issued by August 31, in time for Project activities to begin on September 1. Unless directed otherwise by the Central Coast Water Board, the Certification will be issued by the Executive Officer according to the typical procedure for issuing water quality certifications.

Lahontan Region

The Lahontan Water Board reviewed how environmental justice (EJ) is conducted in the region and examined new ways to improve efforts to benefit the disadvantaged communities in the region. The challenges faced by disadvantaged communities (DACs) in the Lahontan region are unique and often different than other DACs in more urban regions. Staff prepared a report to the Regional Board in January 2015 that provided an assessment of existing efforts to help DACs and catalogs EJ concerns. In addition, the report includes recommendations to enhance DACs participation in the regulatory process, expand access to funding and technical assistance, and improve water quality and drinking water. At the Lahontan Water Board's June 19, 2014 meeting, an overview of environmental justice was provided by State and Lahontan Water Board staff that included presentations by two Integrated Regional Water Management Program (IRWMP) groups on their efforts to evaluate the need of, and provide assistance to, small, disadvantaged communities. The report is an outgrowth of the discussions at that meeting, with additional detail provided on how the Lahontan Water Board is currently implementing environmental justice and the needs for more complete implementation to ensure the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws and policies.

In November 2014 (Barstow), and January 2015 (South Lake Tahoe), the Water Board held a public workshop in the southern and northern parts of the region to gather input from stakeholders on actions the Board should implement to adapt to climate change. From more than 400 ideas gathered, three key themes emerged: 1. Protect surface and groundwater quality and quantity by ensuring protection of floodplains, wetlands, and critical recharge areas as well as maintaining/improving vital infrastructure and improving storm water management. 2. Improve water quality and supply by requiring low-impact development (LID) BMPs. 3. Increase communication with the public, continue collaboration with partner agencies, and continue streamlining regulatory process to help implementers on climate change adaptation projects. At the May 2015 Water Board Meeting, staff presented an overview of the ideas gathered from the November and January public workshops. The public was invited to the May meeting but no public comments were received or presented on the climate change item. At the conclusion of the meeting, the Water Board members directed staff to develop a strategy for moving forward with climate change adaptation.

Dairies and Confined Animal Facilities

San Francisco Water Board Permitting

In June 2015, the San Francisco Bay Water Board renewed a region-wide conditional waiver for existing dairies (Dairy Waiver). The Dairy Waiver implements Statewide Minimum Standards for confined animal facilities, and the California Code of Regulations, Title 27. It also implements the Tomales Bay pathogens, Walker Creek mercury, Sonoma Creek pathogens, Sonoma Creek sediment, and Tomales Bay mercury TMDLs.

The Dairy Waiver covers the management of process water, manure, and other materials at 43 dairies, including the application of such materials to pasture and crop lands. In addition, the Dairy Waiver expands coverage to dairy animal types beyond traditional milk cows, and includes requirements for dairy animal grazing operations and for the disposal of wastes generated from onsite animal production and food-processing activities.

Acknowledging the unique and valuable character of the San Francisco Bay Region's dairies, staff strived to develop a program that is protective of water quality, builds upon existing efforts to manage wastes, is practical to implement, mindful of costs, and is compatible with the North Coast Water Board's dairy program. Staff enlisted a technical advisory group with agricultural interests and expertise to vet ideas and solicit input on the requirements of the Dairy Waiver, including its monitoring, waste, grazing, and nutrient management elements.

Since permit adoption, San Francisco Water Board staff participated in two educational workshops that were hosted by the California Dairy Quality Assurance Program, a collaborative partnership between the dairy industry and government agencies. The workshops were intended to answer dairy producer questions and to facilitate enrollment and compliance with new waiver requirements. The Water Board is looking forward to the next significant permit milestone, submission of a monitoring and reporting program to assess impacts to water quality, and respond with actions to identify the source and correct the problem.

In June 2016, the San Francisco Bay Water Board adopted region-wide general WDRs for the management of waste at confined animal facilities. The WDRs regulate all types of confined animal facilities (CAFs) and implement federal and State regulations and TMDLs for impaired watersheds. The significance for TMDL implementation is that it addresses facilities, such as horse boarding operations that haven't been permitted in the past. The permit replaces, and significantly improves upon, the existing general WDRs adopted in 2003.

FREE HELP IS ON THE WAY!

March sessions offer RB-2 Bay Area dairies help to comply with water-quality Waiver requirements

On June 10, 2015, the San Francisco Bay Regional Water Quality Control Board (RB-2) adopted a renewed Conditional Waiver (R2-2015-0031), which applies to all types of dairies constructed and operating as of that date within the region. Complete Waiver information can be found on the RB-2 website at http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/agriculture/CAF.shtml

CDQAP will provide "one-stop-shopping" producer-friendly workshops in March (see right) to assist producers in understanding monitoring requirements. **The workshop information topics will include:**

- What you should be doing now so you can successfully complete this year's annual report with the new annual reporting requirements;
- How to monitor Residual Dry-Matter (RDM);
- Waste Management Plan. Getting started on mapping and other plan details; and
- Updates on other water quality issues.

Attendees should bring:

- ⇒ CDQAP RB-2 Waiver Reference Binder;
- ⇒ APN numbers for ALL owned, leased or rented land, including lands used for grazing and manure management.

WORKSHOP SCHEDULE

Point Reyes Station location
1:00 - 4:00 p.m.
Wednesday, March 23
Marin County Farm Bureau Office
520 Mesa Road
Point Reyes Station, CA

Petaluma location
9:00 a.m. - 12:00 p.m.
Thursday, March 24
USDA/NRCS Conference Room
5401 Old Redwood Highway
Petaluma, CA
(In the SMART Train building, across from Reed's Trailer Sales)

CALIFORNIA DAIRY RESEARCH FOUNDATION
Our Programs, Your Breakthroughs®

Figure 18: San Francisco Bay Region Dairy Workshop Flyer

The CAF WDRs establish three regulatory tiers based on facility type and threat to water quality:

- Tier I facilities are those that do not utilize liquid waste retention ponds to manage animal waste, such as horse-boarding facilities or small-scale sheep dairies.
- Tier II facilities include those that utilize waste retention ponds, such as cow dairies, or large scale poultry operations.
- Tier III is reserved for any facility that, due to its inherent complexity or threat to water quality, cannot meet the discharge prohibitions and should be regulated under an accelerated implementation schedule

The WDRs anticipate the 2020 expiration of the Dairy Waiver, described above. Dairies that are in compliance with the requirements of the Dairy Waiver will not be required to complete any additional paperwork or plans or undertake any new actions beyond the submittal of an updated notice of intent to enroll under Tier II of the WDRs in 2020.

The CAF WDRs represent the first time the San Francisco Bay Water Board would be actively enrolling equestrian facilities or poultry operations under a general permit. Staff conducted outreach meetings and hosted a workshop to engage stakeholders. As with the dairy program, short-term work will emphasize outreach and enrollment, and emphasize collaborating with local resource conservation districts and county programs to provide technical assistance for planning, implementation of best management practices, and water quality monitoring.

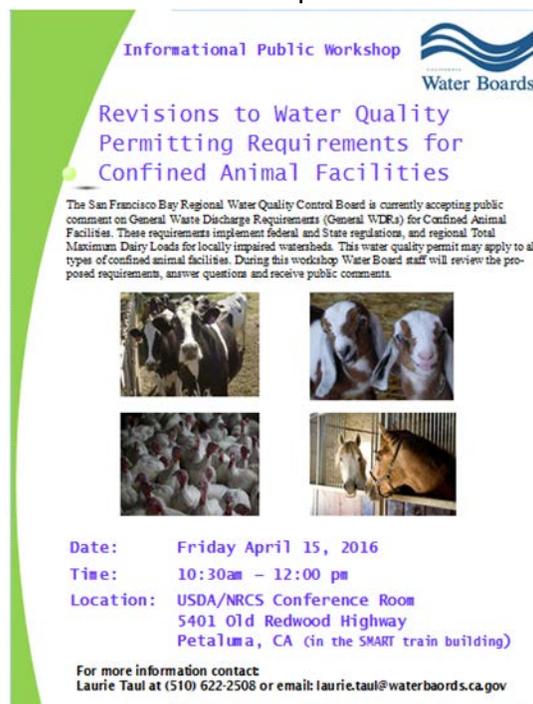


Figure 19: San Francisco Bay Region Workshop Flyer for Confined Animal Facilities

Central Valley Water Board Permitting

The Central Valley Water Board's Confined Animal Facility program regulates approximately 1,300 dairies through the Dairy General Order, the Onsite Dairy Digester General Order, and individual orders. In order to protect surface water and groundwater quality, each Order contains a prohibition against the discharge of any dairy waste from a production area to surface water and requires monitoring of discharges from cropland under specific conditions. The General Orders also require monitoring of groundwater either by individual dairies or cooperatively through the Dairy Representative Groundwater Monitoring Program. Dairies are subject to a robust inspection program to ensure compliance with the Orders.

Although dairies compose the majority of Confined Animal Facilities in the Central Valley Region, the Region also contains a significant number of poultry facilities, bovine feedlots to raise beef cattle, and heifer and calf facilities to support the dairy industry. During the past year, draft General Orders have been prepared to address both poultry and bovine feedlots. A series of stakeholder meetings and discussions have been held and valuable input has been obtained from industry groups and other stakeholders. Each draft general order is currently being revised and both are scheduled to be released for public comment in September 2016, followed by a hearing before the Central Valley Water Board in December 2016 where adoption of the General Orders will be decided.

Lahontan Water Board Confined Animal Facilities

There are seven dairies and three heifer ranches in operation in the Lahontan Region for a total of ten CAFs. Only three active and one inactive dairy are regulated under waste discharge requirements (see table below). The waste discharge requirements for inactive N & M Dairy will not be rescinded until site cleanup is completed. Some CAFs have cleanup and abatement orders issued to them requiring delivery of replacement water to affected residents.

Staff is developing a General Order that would regulate the CAFs and will prohibit unlined wash water ponds, establish criteria for applying manure and wash water to cropped areas, and establish standards for storm water management within the corrals and dairy sites. The General Order will not address cleanup of groundwater pollution. A stakeholders meeting was held on November 19, 2015 to introduce the CAF General Order concept. The stakeholders asked for creation of a TAC to research and make recommendations about minimum monitoring standards.

Table 6: Summary of Lahontan Region Confined Animal Facilities

| Facility | WDRs | CAO to Provide Water? | Groundwater Pollution? | Status |
|------------------------|------|-----------------------|------------------------|---|
| Active Dairy | | | | |
| Harmsen Dairy | No | Yes | Yes | A CAO was developed requiring discharge to the unlined wash water pond to cease. It will not be issued and the facility will be covered under the General Order which will likely prohibit use of unlined waste disposal ponds. |
| A & H Dairy | Yes | No | Yes | The dairy stopped flood irrigation of pure wash water and now mixes wash water with fresh water that is applied to crops at an agronomical rate. |
| Dutch Dairy | Yes | Yes | Yes | The dairy over applies wash water to irrigate a small pasture area. The facility will be covered under the General Order which will likely require wash water to be applied at agronomical rates or placed in lined ponds. |
| B & E Dairy | Yes | No | Yes | A draft CAO was released to the public requiring the dairy to provide replacement water. Water Board staff and dairy owner did additional discovery which indicate all residents within concerned area are connected to the Golden State Water Company with the exception of one resident. B & E sampled that well and nitrate was below drinking water standards, TDS was around 1300 mg/L. The Resident did not want bottled water supplied or routine sampling of his water supply well conducted. |
| John Van Leeuwen Dairy | No | No | Unknown | The dairy has unlined wash water disposal ponds. Staff sampled nearby residential wells on January 21, 2016. All wells were below the primary and secondary MCL. |
| Hinkley Dairy | No | Yes | Yes | Operating |
| High Desert Dairy | No | No | No | Operating |
| Active Heifers | | | | |
| Desert View Dairy | No | yes | Yes | Dairy closed. Heifer ranch is moved in. |
| Green Valley Farms | No | No | No | Operating |

2015-2016 Nonpoint Source Pollution Control Program - Annual Report
 California State and Regional Water Quality Control Boards

| Facility | WDRs | CAO to Provide Water? | Groundwater Pollution? | Status |
|--------------------|------|-----------------------|------------------------|--|
| Alamo Mocho Ranch | No | No | No | Operating |
| Closed | | | | |
| N & M Dairy | Yes | Yes | Yes | Dairy ceased operation as of July 2013. Cleanup in progress. |
| Meadow Brook Dairy | Yes | No | No | Dairy closed and permit rescinded in June 2013. |
| DVD Heifer Ranch | No | Yes | Yes | Moved to DVD dairy location. Corrals and structures removed. |



Delta Regional Monitoring Program

The Delta Regional Monitoring Program (RMP) was formed to develop water quality data necessary for improving our understanding of Delta water quality issues. The goal is to better coordinate and design monitoring activities in and around the Delta and to create a cost effective approach for providing critically needed water quality information to better inform policy and regulatory decisions of the Central Valley Water Board and other federal, state and local agencies and organizations. The Delta RMP reflects an increasing desire among water quality and resource managers throughout the state for more integrated information about patterns and trends in ambient conditions across watersheds and regions. Moreover, many stressors on beneficial uses are interrelated and must be addressed more holistically. The Delta RMP can be seen as a complement to existing larger-scale collaborative monitoring efforts throughout the state that attempt to address questions and concerns about regional conditions and trends.

Currently the RMP is focused on pesticides and toxicity, pathogens, mercury, and nutrients. Pesticides and toxicity are being monitored to evaluate to what extent current use pesticides are contributing to toxicity to aquatic life in the Delta. This monthly monitoring for about 150 pesticides started in July 2015 at five locations in the Delta. The pathogens component is a two-year study to monitor *Cryptosporidium* and *Giardia* concentrations at numerous drinking water intakes and at ambient locations throughout the Delta. During the first year of the study (April 2015 through January 2016), the concentrations of these two pathogens were below drinking water objectives. The RMP also has a design for monitoring mercury and methylmercury levels in water and fish, but due to budget constraints this monitoring will not begin until August 2016. For nutrients, the RMP has been synthesizing existing data to help inform nutrient monitoring which will begin next year.

Delta Mercury Control Program

A TMDL for methylmercury in the Delta was approved by US EPA in 2011. During Phase 1 of the TMDL (2011–2018), entities that discharge methylmercury are required to conduct studies to test and evaluate methods of limiting methylmercury entering Delta waterways in order to reduce the levels in Delta fish and achieve water quality objectives. Control study work plans submitted to the Central Valley Water Board encompassed most of the types of methylmercury sources identified in the TMDL report, namely seasonal and tidal wetlands, municipal wastewater, urban and industrial storm water, and open water channels. The work plans were reviewed by an independent technical advisory committee and approved by the Executive Officer in 2013. Entities implementing the control studies submitted mid-term progress reports in October 2015. Data show that waste water treatment systems with nitrification-denitrification processes have near- or non-detectable levels of methylmercury in effluent. Storm water entities are evaluating the effectiveness of settling basins and low impact development at trapping methylmercury. Wetland managers are evaluating the effect of passing water from seasonally flooded wetlands (shallow, typically with high methylmercury concentrations) through permanent ponds (deep areas designed to promote methylmercury settling and degradation by ultraviolet light).

In addition, the Delta Mercury Control Program has initiated a program to protect public health by reducing exposure to mercury in fish caught in the Delta. This is a collaborative effort of the Central Valley Water Board, California Department of Public Health, the Delta Conservancy,

and the Office of Environmental Health Hazard Assessment. Recent accomplishments in this program include hosting quarterly meetings for education and networking among community stakeholders; training grant recipients to conduct education in their communities; outreaching to numerous local agency and community organizations in five Delta counties; developing educational materials, including translations into eight non-English languages; and developing fish consumption advisory signs to be posted at numerous locations in the Delta.

Central Coast Region Groundwater Assessment and Protection

The Central Coast Ambient Monitoring Program – Groundwater Assessment and Protection (CCAMP-GAP) effort is coordinating with the State Water Board for funding to implement a domestic well outreach and sampling project within the Central Coast Region with an emphasis on high-risk nitrate areas and DACs. The project is intended as a pilot to inform the implementation of similar projects in the State where there is significant groundwater pollution affecting drinking water and domestic wells.

The Central Coast Water Board released an invitation for bid for prospective applicants to implement field sampling, analytical testing and data management activities for the Domestic Well Sampling Project. Bids were received on April 27, 2015, and a drought exemption was pursued by staff and subsequently approved by the Division of Finance on July 10, 2015 to expedite the contracting process for this portion of the project. A contract agreement was ratified with the selected contractor, Tetra Tech, Inc., in October 2015. Central Coast Water Board staff is currently working with Tetra Tech on the development of the Quality Assurance Project Plan (QAPP) and it is anticipated that Tetra Tech will launch field sampling in the spring of 2016.

A lack of capacity to identify and address the drinking water needs of DACs in the Central Coast exists. To address this need CCAMP-GAP is developing a project to increase outreach and technical assistance to DACs and leverage other funding sources to address interim and long-term drinking water needs, including the development of sustainable DAC capacity to manage drinking water systems.

The program will be funded with GAP supplemental environmental project (SEP) funds. An emphasis will be on leveraging the services of other entities and programs to provide technical support and funding to identify and implement drinking water solutions. To effectively leverage this project, it will also be coordinated with existing regional and state funded efforts such as the Central Coast Domestic Well Outreach and Sampling Project, Salinas Valley Disadvantaged Community Integrated Drinking Water and Wastewater Plan, Safe Drinking Water Grant Project, etc.

Staff has recently shifted its focus to coordinating with Tetra Tech instead of the Environmental Coalition for Water Justice (EJCW) to develop the scope of work and budget and an associated a funding agreement to implement the project. Implementation of the project will consist of an initial piloting phase to gauge the effectiveness of increasing DAC-related capacities and leveraging of other services and funds. Increased funding will be considered based on the performance of the project.

Los Angeles Region Contaminated Sediment Remediation Program

Several waterbodies in the Los Angeles Region are impaired due to pesticides and other toxic pollutants in sediments, including McGrath Lake, Machado Lake, and Marina Del Rey Harbor. The contaminated sediments are the result of historically deposited sediments containing toxic pollutants - often banned pesticides that are no longer in use. The concentrations of toxic pollutants in the bed sediment is often so high that the sediments themselves become a source of pollutants to the overlying water column through sediment resuspension, bioturbation, and desorption. In some cases, the TMDLs for these waterbodies have assigned load allocations to the contaminated bed sediment.

The contaminated sediment remediation program focuses on implementation of the TMDLs for these contaminated waterbodies. The TMDLs assign load allocations to the sediments and allow for implementation through a voluntary memorandum of agreement. The TMDLs specify that the memorandum of agreement and subsequent remediation activities must comply with the NPS Implementation Policy, including specifically the five key elements. Cooperating parties identified in the TMDLs must develop workplans detailing how they will remediate the sediments using implementation measures such as dredging, capping, riparian restoration, and monitored natural attenuation. The strategy is for the Regional Water Board to enter into memorandums of agreement (MOAs) with cooperating entities, oversee the development of workplans, and ensure that those workplans are implemented. The Machado Lake final compliance deadline is September 30, 2019 and the McGrath Lake final compliance deadline is June 30, 2025. The Marina Del Rey Harbor TMDL final compliance deadline is 2029.



Figure 20: : Hydraulic dredging of contaminated sediments at Machado

During fiscal year 2015-2016, the City of Los Angeles continued to implement the Machado Lake Restoration Project in compliance with the Machado Lake Nutrients and Toxic Pollutants TMDLs. The Restoration began in March 2014 and is expected to be completed in April 2017. The project includes in-lake improvements such as dredging approximately 239,000 cubic yards of lake sediment and capping the lake bottom, constructing an oxygenation system, installing five storm water treatment systems, removing

invasive plants, replanting of native species, and installing recreational amenities. The project cost is \$74.8 million and is being funded by the City of Los Angeles' Proposition O.

For the Marina del Rey Toxic Pollutants TMDL, Los Angeles Water Board staff and the County of Los Angeles have been in negotiations in fiscal year 2015-2016 to execute an MOA to develop a work plan for contaminated sediment remediation. It is expected that the MOA will be executed in the first half of fiscal year 2016/17.

Regional Salinity Management Plans

CV-SALTS

The Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) is a strategic initiative to address salinity and nitrates in surface water and groundwater in a manner that ensures environmental and economic sustainability. CV-SALTS stakeholders include a broad group of agriculture, city, environmental justice and disadvantaged community representatives, industry, Central Valley Water Board, and State Water Board. These stakeholders are collaboratively developing a comprehensive Salt and Nitrate Management Plan (SNMP) for the Central Valley. The SNMP is intended to provide a blueprint for the Central Valley Water Board's regulation of salt and nitrates throughout the entire Central Valley. The technical work of projects that CV-SALTS participants review provides the foundational support for the development of a final SNMP.

Substantial technical work was completed during fiscal year 2015-2016. For example, the Nitrate Implementation Measures Study (NIMS), which was completed in spring 2016. The NIMS study evaluated nitrate contamination in the groundwater basins of the Central Valley to help develop appropriate implementation measures to mitigate contamination using a phased approach that includes providing safe drinking water, reducing or eliminating impacts to drinking water sources, and implementing managed restoration activities where needed to restore beneficial uses in groundwater. Findings from NIMS will be evaluated along with findings from the Strategic Salt Accumulation Land and Transportation Study (SSALTS) to develop a coordinated salt and nitrate management program for incorporation into the SNMP, which is expected to be completed December 2016.

The Alta Irrigation District Management Zone Archetype study is also one of several technical work efforts of CV-SALTS. The purpose of this study is to help test, on a spatially refined basis, the application of selected policies, data analysis methods, and salt and nitrate management approaches that are currently being considered by CV-SALTS. The study was completed in May 2016; its results will be used to inform the development of implementation elements of the SNMP.

In addition, there were three Basin Plan amendment efforts underway in fiscal year 2015-2016 that serve as case studies, or archetypes, for the stakeholder driven CV-SALTS initiative. These proposed Basin Plan amendments are expected to be considered by the Central Valley Water Board during fiscal year 2016-2017.

- (1) A Beneficial Use Evaluation Study has been drafted for the Tulare Lake Bed MUN–AGR Archetype study that is evaluating the appropriate designations and level of protection for waterbodies currently designated with the municipal (MUN) and agricultural (AGR) beneficial uses. Findings from the study are being utilized to develop a staff report for a potential Basin Plan amendment that would allow increased flexibility in salt management within the Tulare Basin.
- (2) The CV-SALTS Lower San Joaquin River (LSJR) Committee completed efforts to compile technical information necessary to support a Basin Plan amendment for salinity water objectives for the stretch of river between the Merced River and Vernalis. Final technical reports completed in September/October 2015 on the economic, monitoring and surveillance, and environmental review components were utilized to develop a draft

staff report and proposed Basin Plan amendment language to define salinity water quality objectives that are protective of beneficial uses in the LSJR.

- (3) The last case study is a proposed Basin Plan amendment that would establish a water body categorization framework in the Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and the Tulare Lake Basin that the Central Valley Water Board could utilize to determine the appropriate application of, and level of protection for, the Municipal and Domestic Supply (MUN) beneficial use in different types of agriculturally-dominated surface water bodies.

The CV-SALTS Executive Committee continued its open stakeholder process by providing an Annual Progress Report to the State Water Board. In addition, the Central Valley Water Board held a public workshop in June 2016 regarding the framework for the SNMP. CV-SALTS Executive Committee meetings continue to focus on providing input on finalizing components of the draft SNMP. A summary of all CV-SALTS technical work can be found here:

<http://www.cvsalinity.org/index.php/committees/technical-advisory/technical-projects-index.html>

Lahontan's Salt Nutrient Management Plan

Lahontan's Salt Nutrient Management Plan efforts focus on ten groundwater basins determined to be priority basins by information from the State's Groundwater Ambient Monitoring and Assessment (GAMA) Program. The ten priority basins are listed below, along with a brief statement on the status of SNMP development for each basin. (Note: These are ten priority basins of the more than 345 groundwater basins and sub-basins named in the Region.)

- Honey Lake Valley - draft plan completed in December 2015; staff review underway
- Tahoe Valley – preliminary draft plan (technical memo) completed in December 2015; staff review underway
- Martis Valley – no significant SNMP actions yet initiated
- Owens Valley - no significant SNMP actions yet initiated
- Indian Wells Valley – plan development underway with draft SNMP expected by the end of 2016, An information item on the Indian Wells Valley SNMP is scheduled for the June 2016 Water Board meeting.
- Tehachapi Valley East – draft plan completed in February 2010; staff review underway
- Antelope Valley – final SNMP accepted by the Regional Board in November 2014
- Mojave (Upper Mojave River Valley, Middle Mojave River Valley, Lower Mojave River Valley) - final SNMP for these three basins accepted by the Regional Board in February 2016

Thus, SNMP efforts are underway or completed in eight of our ten priority basins, addressing 78% of the Lahontan Region's priority basin acreage.

SNMP development is underway for other basins in the Lahontan Region. Lahontan Water Board staff is currently reviewing the final SNMP prepared by the Fort Irwin National Training Center, U.S. Army for the Langford Valley Basin, Irwin Subbasin of the Langford Valley Basin and the Bicycle Valley Basin. Staff plans to present the final SNMP to the Board in January 2017 for acceptance.

Onsite Wastewater Treatment Systems

OWTS are commonly known as septic systems and primarily treat domestic wastewater and employ subsurface disposal. California has more than 1.2 million OWTS. Over 40% of these are in the Central Valley. OWTS are typically domestic systems in areas without centralized sanitary sewers; most do not pose a significant threat to human health and water quality. However, poorly sited, designed, and maintained OWTS can impact shallow groundwater, primarily with nitrates and pathogens. In 2000, Governor Gray Davis codified California Water Code §13290 et. seq., a modified form of Assembly Bill 885, due to related public concerns. These sections directed the State Water Board to adopt standards or regulations for OWTS. On 19 June 2012, State Board adopted Resolution No. 2012-0032, which includes the Water Quality Control Policy for Siting, Design, Operation and Maintenance of OWTS (OWTS Policy).

To comply with the OWTS Policy, the Central Valley Water Board required local agencies to submit draft Local Agency Management Plans (LAMPs) to the Central Valley Water Board by 13 May 2016. According to the OWTS Policy, LAMPs must be consistent with Basin Plans, in the public interest, and not exceed five years in duration. Section 9 of the OWTS Policy provides minimum standards; considerations for siting and design, record keeping, and reports to Regional Water Boards.

The Central Valley Water Board received draft LAMPs from 29 local agencies by the deadline. Once received, Central Valley Water Board staff reviews the drafts; works with local agencies to obtain their Board of Supervisors' approvals and related code adoptions; and seeks subsequent Central Valley Water Board approvals. The Central Valley Water Board's Redding, Rancho Cordova, and Fresno Offices are coordinating LAMP reviews using a completeness checklist and other recently developed technical guidance, largely based on continuing discussions with the California Conference of Directors of Environmental Health. During fiscal year 2015-2016, Central Valley Water Board staff completed review of 18 LAMPs and held 14 resolution meetings with County Environmental Health Directors, and the Central Valley Water Board approved 2 LAMPs. Deadline for LAMP approvals is 13 May 2017, although the last practical opportunity will be the April 2017 regular Board meeting. Staff regularly updates progress on the following webpage:

http://www.waterboards.ca.gov/centralvalley/water_issues/owts/lamp_reviews/index.shtml

Lahontan Water Board is the lead for approving five county and four city LAMPs by May 13, 2017. Other Regional Water Boards are the leads for approving seven county LAMPs that are partially in the Lahontan Region. Lahontan Water Board staff has provided comments to El Dorado County, Kern County, and San Bernardino County on their draft LAMPs. After reviewing the other draft LAMPs received to date, the following four main policy issues are identified:

1. Density – As the numbers of OWTS increase (and especially on smaller lot sizes), the impact of effluent discharges on receiving waters increases. Limiting overall density is one means of protecting water quality. The Water Board will need to assess how water quality will be protected by proposed density criteria in each draft LAMP. Most LAMP proposals support the Board's past criteria of ½ acre lot size as compared to the newer State Water Board Tier 1 density criteria based on rainfall (in some cases the difference between a ½ acre lot and 2½ acre lot sizes). The Water Board may evaluate and consider a more protective density criteria as established in State Water Board's Tier 1 as compared to status quo.

2. Water Quality Assessment Programs – Local agencies proposing a LAMP must implement a program to evaluate the impact of OWTS discharges and assess the extent to which groundwater and surface water quality may be adversely impacted. All draft LAMPs have proposed a program. No program proposes to install monitoring wells due to cost and intend to rely upon existing groundwater and surface water data collected by others. State Water Board staff to date have encouraged cooperation and partnering to obtain water quality analyses focused in areas of highest risk. The State Water Board may consider a targeted water quality monitoring program in high risk areas rather than a comprehensive geographic approach, or another monitoring approach.

3. Approvals and Referrals of Supplemental Treatment Systems - The OWTS Policy allows local agencies to approve OWTS up to a flow of 10,000 gal/day and at their discretion refer any system to the Water Board for regulation under waste discharge requirements. It also allows local agencies to propose criteria for Supplemental Treatment Systems (STS) to provide additional wastewater treatment to meet performance criteria prior to effluent discharge into a dispersal system. Some local agencies may refer all STS to the Water Board for regulation under waste discharge requirements. Other local agencies propose regulating STS but may not have adequate resources to ensure program effectiveness. The Lahontan Board needs to ensure LAMPs define clear expectations for STS review and approval.

4. Local Agency Funding – Current fees and assessments may be inadequate for implementing the LAMPs as required. Local agencies may have to increase funding to pay for increased staffing and monitoring costs. The Water Board will need to determine if adequate funding is available to a local agency to implement an effective program.

To improve water quality assessment programs, Lahontan Water Board staff will request targeted monitoring in identified high risk areas and request local agencies identify any existing supply wells or dedicated monitoring wells that could be used as well as any existing and ongoing water quality data from all available sources that may be used for the required periodic water quality performance assessments. Lahontan Water Board staff will continue to meet with local agencies and other regional board staff to address concerns before the final LAMPs are submitted for Water Board consideration. In 2017, Lahontan Water Board staff anticipates bringing nine LAMPs to the State Water Board for consideration of approval by resolution.

In the Colorado River Basin Water Board, local agencies will continue implementing their existing OWTS permitting programs in compliance with the Basin Plan until May 13, 2018, or until approval of their LAMPs by the Regional Water Boards. Colorado River Basin Water Board adopted a resolution approving the Imperial County LAMP on June 30, 2016. The Alamo River and the Palo Verde Lagoon are listed on Attachment 2 of the OWTS Policy for pathogen impairment. To address this concern, the Imperial County Department of Environmental Health (ICDEH) has included an Advanced Protection Management Program as special provisions within the LAMP. The LAMP requires supplemental treatment for any new or replacement OWTS within 200 feet of the Alamo River. The ICDEH is also leading an effort to provide a centralized wastewater system within Palo Verde servicing all existing OWTS within the lagoon and outfall drain area. On January 28, 2016, the Imperial County Local Agency Formation Commission approved the award of sewerage authority to the Palo Verde County Water District. The ICDEH is working with the U.S. Department of Agriculture, the U.S. Environmental Protection Agency, and the Border Environment Cooperation Commission to identify sources of funding for the Palo Verde Waste Water Treatment Plant that is planned for completion by 2021. Colorado River Basin Water Board staff continues to work with Riverside and San Bernardino County Health Departments to collaborate on the development of their LAMPs.



Figure 21: Palo Verde drains and Septic

Mitigating New River Pollution from International Boundary

Priority water quality issues in the Colorado River Basin Water Board region include management of organic matter, pathogen and trash contamination of the New River. Surface water pollution from International Boundary is considered nonpoint source by State Water Board regulations. Wastewater treatment facilities in Mexicali, Baja California, Mexico constructed over the past decade and funded by the United States Environmental Protection Agency and Mexico have removed much of the raw sewage from the New River, which flows across the international border into the Imperial Valley. Water quality at the international border has significantly improved in the past few years as a result.

Since late March 2016, Colorado River Basin Water Board staff has participated in five meetings with staff from the Governor's Office, Cal EPA's Executive Team, Natural Resources Agency, State Transportation Agency, and Assemblyman Eduardo Garcia's office (D-Coachella) to discuss implementation of New River Improvement Project recommendations for the City of Calexico



Figure 22: New River International Border

area. A draft project implementation plan for Calexico has been prepared. In April 2016, the City authorized the city manager to be a co-applicant for a Proposition 1 grant to fund the design and environmental documentation for the improvement projects for the New River in the Calexico area.

The Colorado River Basin Water Board is a member of the Binational Technical Committee (BTC) for the New River/Mexicali Sanitation Program. The BTC identifies pollution problems, oversees development and implementation of the binational sanitation projects agreed upon by Mexico and the US, and makes project and policy recommendations to address overall New River pollution from Mexico. The BTC now meets and conducts the Observation Tour of the New River every three months, in Mexicali. The Colorado River Basin Water Board staff: a) reports on each of the Binational tours and inspections, b) review International Boundary Water Commission (IBWC) bimonthly monitoring data (24 sampling events per year) and use data on Water Quality Report Cards and other reports, c) monitor monthly water quality at the border including constituents not analyzed by IBWC monitoring

The Colorado River Basin Water Board uses its BTC membership to advocate that Mexico implement the New River Improvement Project Strategic Plan's recommendations. A copy of the Strategic Plan can be found at:

<http://www.calepa.ca.gov/border/CMBRC/2011/StrategicPlan.pdf>. Point sources for pathogens in USA are regulated and managed by the NPDES program. NPS pathogens in the USA are regulated by TMDL, NPS and OWTS Policy implementation.

Marinas

Newport Bay

Newport Bay, located in the Santa Ana Regional Water Quality Board (Santa Ana Water Board) area, is the homeport of more than 10,000 recreational vessels, with Newport Harbor among the largest yacht harbors in the United States. Paints and coatings are commonly applied to the hulls of moored and docked boats in the Bay that include ingredients to discourage or slow the growth of marine life (fouling) including weeds, algae and aquatic organisms from attaching and causing serious damage (Figure 23). Antifouling paints generally have been formulated with toxic biocides containing forms of copper, zinc, or other metals that leach into waters.

Copper hull paints have been identified as the largest source of copper pollution in several California marinas, including Newport Bay. While copper is an essential nutrient at low



concentrations, as concentrations increase, it causes adverse effects on the growth and reproduction of aquatic organisms, and toxicity at higher concentrations. Sampling of copper from Newport Bay water and sediment demonstrated and established that concentrations are excessively high, and that NPS copper-based antifouling paints are the primary sources of copper inputs.

Figure 23: Fouling

Santa Ana Water Board staff have been developing TMDLs for copper, and non-TMDL action plans to address copper, zinc, mercury, arsenic and chromium in the Newport Bay watershed. Santa Ana Water Board staff hopes to have the Santa Ana Water Board consider adoption of the TMDLs during fiscal year 2016-2017.

The adoption of the copper TMDLs has been highly controversial, and staff continues to work with local stakeholders and agencies to address concerns regarding the copper TMDLs. As part of the adoption process, Santa Ana Water Board staff held two public CEQA scoping meetings on July 23, 2015 in Newport Beach, California for the proposed copper TMDLs/metals action plans Basin Plan amendment to receive and hear commenters express their concerns. Their primary issues include the science behind the applicable California Toxics Rule copper criterion, and the implementation actions necessary to reduce copper inputs into Newport Bay, such as the use of non-toxic antifouling paints. Santa Ana Water Board staff participation in the State Marina Interagency Coordinating Committee and Copper (Antifouling) Workgroup, comprised of

the State and Regional Boards, plus other State and federal agencies, provides guidance to similar issues confronting other Regional Boards.

Implementation of the Newport Bay copper TMDLs will require copper loading and inputs be reduced or eliminated in order to improve water quality. In 2010, Santa Ana Water Board staff helped the City of Newport Beach and the Orange County Coastkeeper, a local environmental organization, obtain a NPS grant to promote voluntary conversion of boats from copper to non-biocide hull paints. The grant provided incentives to those boat owners willing to remove copper-based paint from their boats, and instead use a type of non-biocide paint. The program was under-utilized because boat owners expressed a great deal of hesitation about the effectiveness of non-biocide paints. However, the program was successful in educating boaters about how excessive copper is causing impairment to Newport Bay's water quality, how the use of copper-based hull paints is the main contributor of copper loading into the Bay, the benefits of non-biocide paints, and the availability of these alternative bottom paints.

In addition, water quality data will continue to be collected as part of the copper TMDLs implementation plan in order to establish how leaching of copper from boat hull paints, as well as other inputs, contributes to the excessive copper concentrations found in Newport Bay. This data will be useful to provide information to boat owners about the impact of using copper-based hull paints. To that end, during fiscal year 2015-2016, Santa Ana Water Board staff received a contract for \$150,000 to conduct a pilot project to determine the copper loads from hull cleaning, and will collect dissolved and particulate copper data. The project will entail using a hull cleaning container/filter system to collect the copper discharged when boat hulls are cleaned. The water used to clean a boat in an enclosed container will be analyzed before and after to determine the copper, zinc and other metals concentrations discharged during hull cleaning.

Since 1998, the Santa Ana Water Board has developed and implemented a number of TMDLs for the Newport Bay watershed. TMDLs for nitrogen, phosphorus, fecal coliform, sediment, diazinon, chlorpyrifos and organochlorine compounds applicable to the Newport Bay and San Diego Creek watershed have been incorporated into the Water Quality Control Plan for the Santa Ana River Basin. Most Newport Bay watershed TMDLs address NPS of pollution including agriculture, hydromodification and groundwater flows. Staff continued to develop Selenium TMDLs for the Newport Bay watershed during fiscal year 2015-2016 for consideration of adoption by the Santa Ana Water Board. These TMDLs are anticipated to supersede TMDLs promulgated by the US Environmental Protection Agency in 2002. Adoption of the TMDLs is expected during fiscal year 2016-2017, and they will include an implementation plan to address point and NPS based groundwater discharges high in selenium. The draft staff report, SED and Basin Plan amendment underwent review and revisions by Santa Ana Water Board staff and the Newport Bay watershed stakeholder group.

A Time Schedule Order approved by the Santa Ana Water Board directs that the stakeholders conduct implementation projects identified in a Best Management Practices (BMP) Strategic Plan in order to address selenium impairment in the Newport Bay watershed. A phased implementation approach has been in use in the Santa Ana-Delhi Channel and San Diego Creek sub-watersheds, and these early implementation measures continue to be monitored to evaluate selenium reductions in groundwater inflows and seepage, the primary sources of elevated selenium concentrations in surface waters.

For many years, the stakeholders have been investigating various technologies to reduce selenium in surface and ground water, which is extremely difficult to treat and/or reduce. They determined that many processes that reduce selenium in the watershed also reduce the concentration of nitrate-nitrogen in water. Controlling and reducing selenium inputs from diffuse

NPS sources has been problematic due to the lack of a cost- and space-effective and practicable treatment technology for selenium, particularly in a highly urbanized watershed, such that the stakeholders have investigated the use of diversion projects to help achieve reductions in selenium concentrations. They are aware diversion projects must be balanced against maintaining sufficient flows to protect instream and downstream beneficial uses in the watershed's fresh and estuarine waters. The watershed beneficial uses include several endangered species that are sensitive to selenium, as well as their critical habitat.

One project proposed by Newport Bay stakeholders to help attain selenium reductions and support meeting the selenium fish tissue and bird egg tissue targets proposed in the Newport Bay watershed selenium TMDLs was the Peters Canyon Channel Water Capture Project. The project, under construction this fiscal year, will divert a portion of the local high selenium nuisance surface and NPS related ground water flows to the Orange County Sanitation District (OCSD) sanitary sewer, and eventually to the Orange County Water District Groundwater Replenishment System. Construction of the Peters Canyon Channel Water Capture and Reuse Pipeline Diversion project began on June 27, 2015, and is almost fully operational (Figure 24).



Figure 24: Construction of the Peters Canyon Channel Water Capture Project

The project will divert four targeted urban runoff sources into an Irvine Ranch Water District sewer pipeline, which will transport the water to OCSD for additional treatment. The project was constructed in a right-of way that runs along the Orange County Flood Control District San Diego Creek and Peters Canyon Channel. As noted, except for electric utilities, construction of the project is almost complete as of June 2016, including installation of over 16,000 feet of pipe. The diversion sites will undergo functional testing starting late summer.